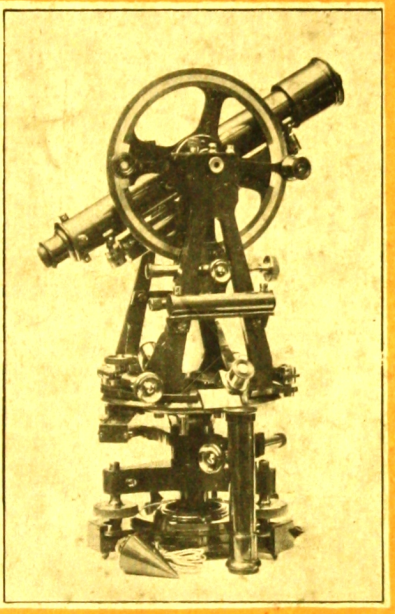
Section A

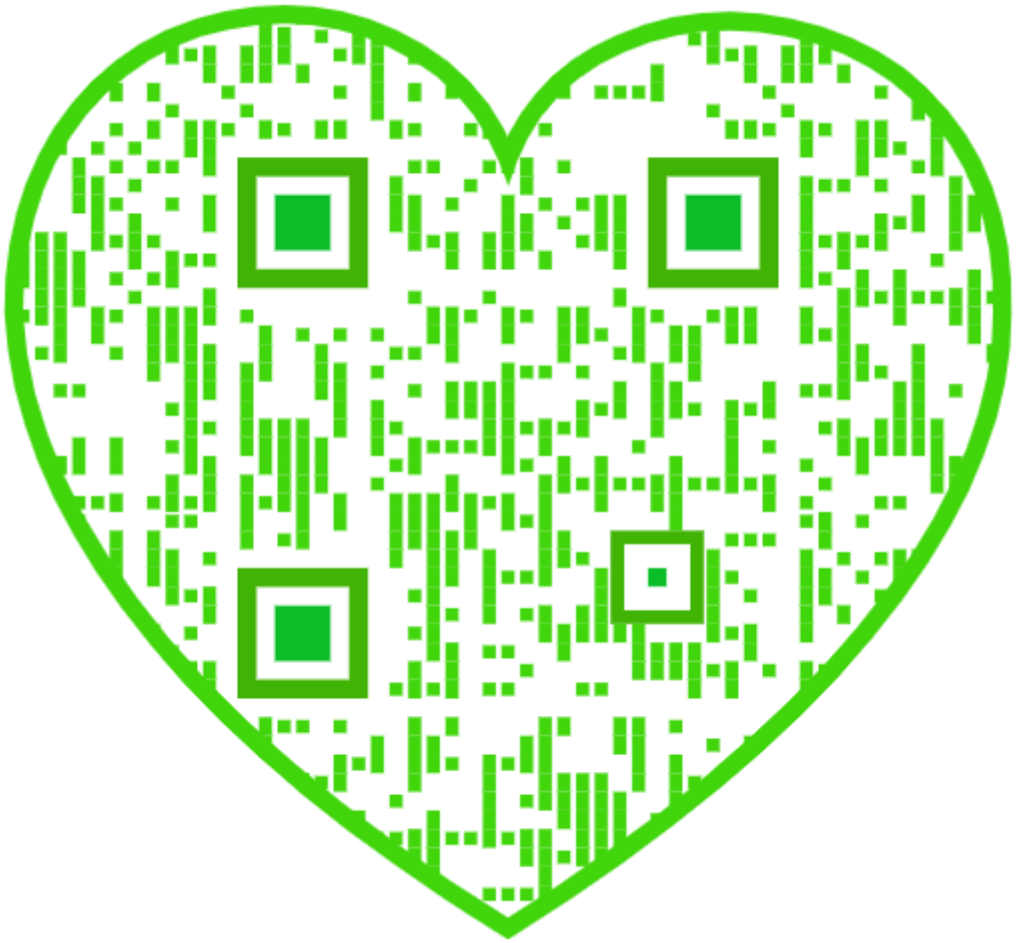
J Halden & Co.

Limited.



Drawing and Surveying Instruments.

Manchester,
London, Newcastle on Tyne,
Birmingham, Glasgow.
Leeds,
Berlin & Paris.



Drawing Office Materials.

J. Halden & Co. Limited

CATALOGUE

FULLY ILLUSTRATED,

is printed in Sections separately, and also in one complete book.

The Sections of the Catalogue are:

A.
Drawing and Surveying Instruments.

B.
Slide Rules, Scales, Drawing Boards, Inks, Colours, Brushes, Pencils, and Sundries.

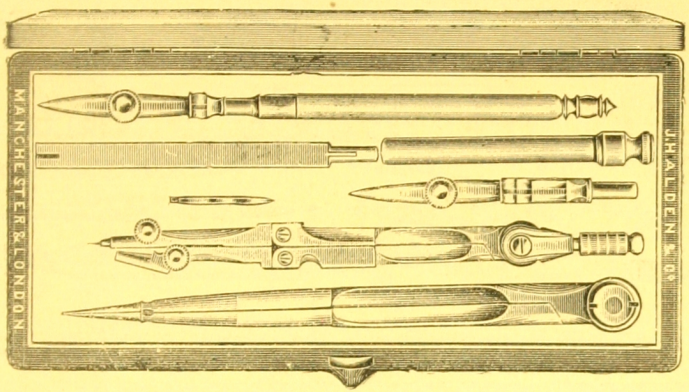
C.
Ordnance Maps, Drawing and Mounted Papers, Tracing Papers and Tracing Cloths.

D.
Photo Copying Machines and Photo Copying Processes.

DRAWING INSTRUMENTS.

SPECIALLY SELECTED FOR

Engineer Pupils, Students in Science and Arts Classes, &c.



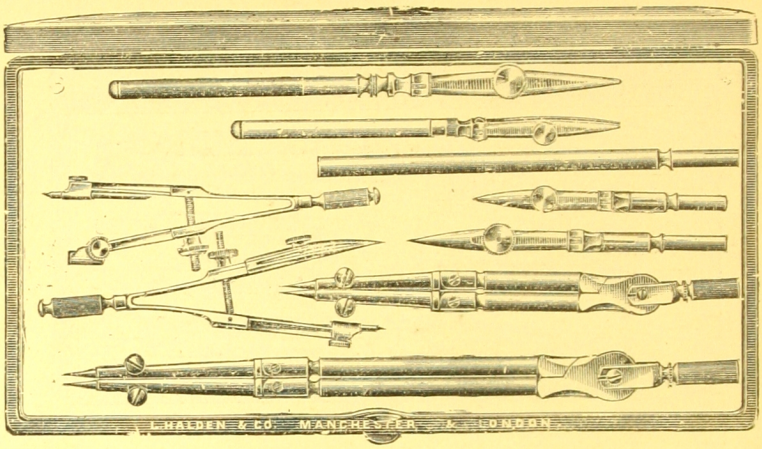
Case 66

POCKET CASES.

		£	s.	d.
63	Neat Leather Pocket Case, containing knee-jointed bow pencil compass, with lengthening bar, divider, drawing pins, compass key, case of leads, brass instruments ..	0	5	0
65	Neat Leather Pocket Case, containing double-jointed needle-pointed bow compasses, with pen and pencil points, lengthening bar, divider, drawing pen, key, and case of leads, brass instruments	0	7	6
66	The same set in handsome snap case, both pens with hinged nib, electrum instruments	0	10	6
67	Snap Case, containing instruments as in Case 66, with the addition of superior pen and pencil spring bows, electrum instruments	0	18	6
68	Snap Case, containing 6-inch jointed compass with needle leg, pen and pencil points, lengthening bar, 4½ inch divider, improved needle-pointed 3-inch spring bow pen, jointed drawing pen with pricker, compass key, and case of leads, electrum instruments	1	2	6
82	Spring Bows, set of three with plain points, pen, pencil, and divider in neat case	0	7	0
84	Spring Bows, set of three, improved needle points, pen, pencil, and dividers, in neat case	0	12	6

New Model Drawing Instruments.

Best Quality Electrum.



The Draughtsman Case. 304.

NEW MODEL POCKET CASES.

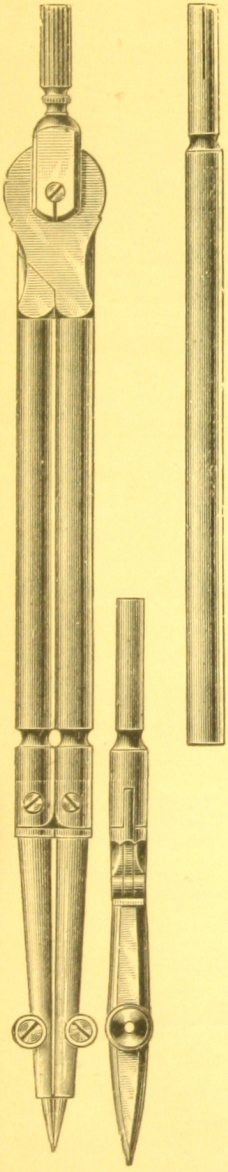
The needle legs take loose leads.

		£ s. d
300	"Beginner's Case" containing 4-inch needle pointed compass with pen leg, needle-pointed spring bow pen, and jointed drawing pen	0 14 6
301	"Scholastic Case" containing 4-inch needle-pointed compass with pen leg and bar, plain point spring bow, pen and pencil, and ivory handle jointed pen ..	0 16 6
302	The "Apprentice Case" containing 4-inch compass, needle points, pen leg, bar, spring bow pen, and ivory handle jointed drawing pen	0 15 6
303	"Student's Case" containing 4-inch needle-pointed compass with pen leg, plain point 4-inch divider, needle-pointed spring bow pen, and spring bow pencil, and jointed drawing pen	1 5 0
304	"Draughtsman Case" containing 6-inch compass needle points, pen leg, bar, 4-inch compass, needle points and pen leg, spring bow pen, and spring bow pencil, needle points, 6-inch and 4½-inch ivory handle jointed pens	2 0 0

A Box of Refill Leads is enclosed in each of the above Cases.

306	Spring Bows, pen and pencil, in neat leather case ..	0 10 0

The New Model Drawing Instruments.



No. 332.

BEST QUALITY ELECTRUM.

Perfect in Finish.

The Needle Points interchange with loose leads.

		£	s.	d.
330	6-in. Electrum Compass with plain points, pencil and pen legs	0	9	0
331	6-in Electrum Compass with plain points, two needle legs (one for lead), pen leg and bar	0	12	6
332	6-in. Electrum Compass needle points (one for lead), pen leg and bar	0	10	6
333	4-in. Electrum Compass, plain points, two needle legs (one for lead), pen leg and bar... ...	0	12	6
334	4-in. Electrum Compass, plain points, two needle legs (one for lead), and pen leg	0	12	0
335	4-in. Electrum Compass, with needle points (one for lead), and pen leg	0	8	6
336	4-in. Electrum Compass, with needle points (one for lead), pen leg and bar	0	9	6

DIVIDERS.

337	4-in. Electrum Divider	0	3	6
338	5-in. Electrum Divider	0	4	0
339	6-in. Electrum Divider	0	5	0
340	6-in. Electrum Divider, in sheath	0	6	6
341	6-in. Electrum Hair Divider ...	0	6	0

SPRING BOWS.

885	Needle Pointed 3-in. Spring Bow Pen	0	4	0
886	ditto ditto Pencil	0	4	0

English Pattern Drawing Instruments.

388

BEST FOREIGN MANUFACTURE.

Half Sets.

		£	s.	d.
350	Half Set 6-in. or 4½-in. Compass, with plain points, pen and pencil legs	0	6	6
351	Ditto ditto, with lengthening bar ..	0	7	6
352	Ditto ditto, with sector joint, double knee-joints, improved needle points, pen and pencil legs, lengthening bar	0	17	6
360	Bow Half Set, 4-in. Pencil Compass, pen leg and lengthening bar, clamp needle points ..	0	9	6
361	Ditto ditto, Improved needle points ..	0	12	6

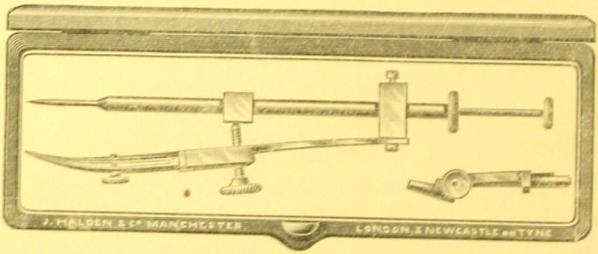
Bows.

374	Bow Pen or Pencil, 3¾-in., plain point ..	0	2	6
380	Ditto ditto, double knee-joints and improved needle points	0	7	6

Drawing Pens.

387	Steel Pen, white bone handle	0	1	0
388	Ditto, jointed, Ivory handle	0	2	0

Spring Bows.



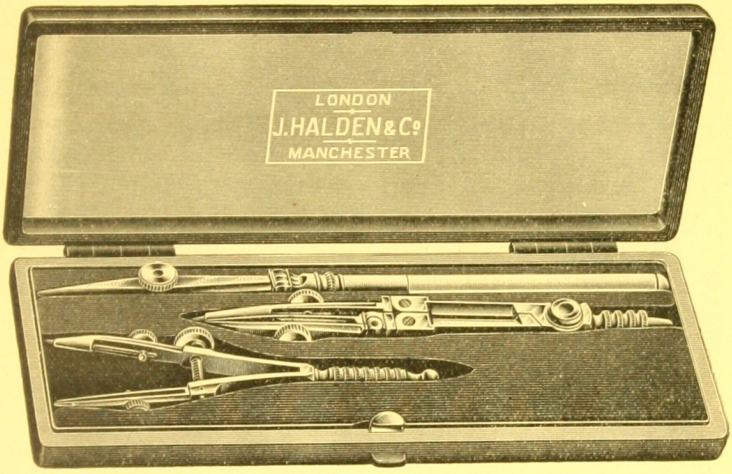
No. 786a.

382	Spring bows, pen, pencil or divider, plain points—each	0	2	3
384	Ditto ditto, improved needle points— each	0	3	6
786a	Rotating spring bow pen with pencil point, in neat case	0	10	6

English Pattern Drawing Instruments.

BEST FOREIGN MANUFACTURE.

Pocket Cases.

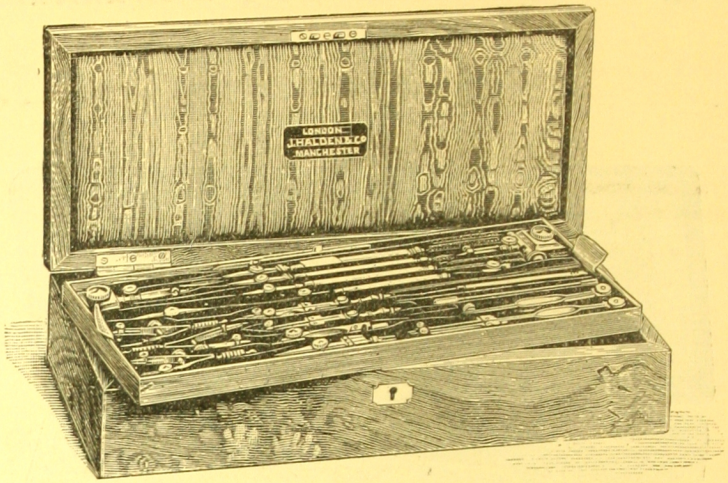


Tracer's Set.

		£	s.	d.
320	Tracer's Set:—Neat pocket case, containing improved pattern bow pen, spring bow pen, both with B needle points, and jointed drawing pen..	0	10	6
321	Neat pocket case, containing bow pen and pencil, improved pattern, with B needle points, and jointed drawing pen.	0	12	6
390	Neat Case, containing needle pointed bow Half Set, key and drawing pen	0	12	6
391	Morocco Case, containing Instruments as 390, with drawing pen jointed, divider and case of leads	0	14	6
395	Morocco Case, containing improved needle pointed bow Half Set, hair divider, spring bow pen and pencil jointed drawing pen, key and case of leads	1	5	0
398	Morocco Case, containing 4½-in. Half Set, with improved needle points, divider, set of three spring bows, with improved needle points, jointed drawing pen and case of leads	1	15	0
399	Morocco Case, containing 6-in. or 4½-in. Half Set, with improved needle points, hair divider, set of three spring bows, with improved needle points. Bow pen and pencil, with improved needle points, two drawing pens and case of leads	2	12	6

Cases of Drawing Instruments.

BEST ENGLISH MANUFACTURE.

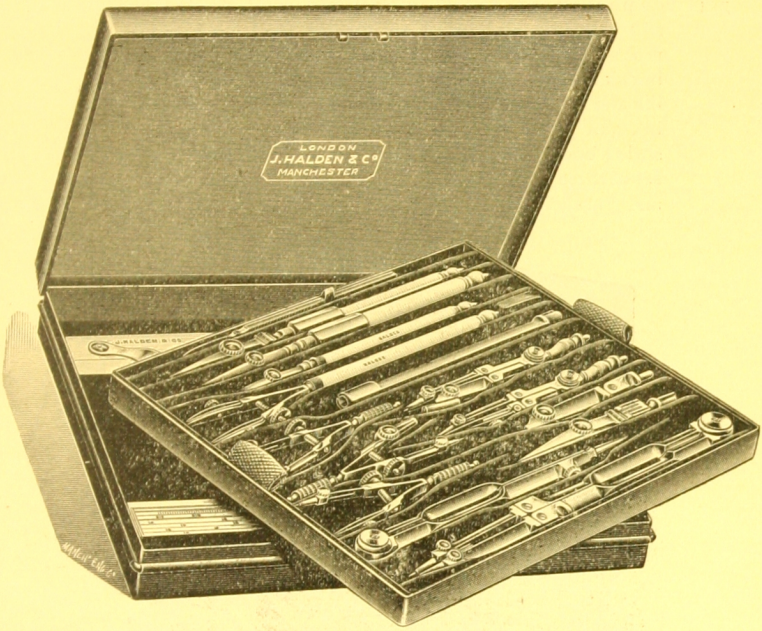


Case 750.

		£	s.	d.
746	PRESENTATION CASE.—Thirteen-inch electrum bound walnut or oak magazine case, containing a complete set of finest quality electrum instruments, scales, colours, &c.; detailed specification on application ..	25	0	0
749	Thirteen-inch Walnut or Oak Case, Hobb's Lock, lined with silk velvet, containing extra quality electrum instruments :—6-in. compass, with improved needle points, ink and pencil points, and lengthening bar; improved hair divider, 6-in. proportional compass, engine divided, ink and pencil bows, with improved needle points; three improved needle point spring bows, beam compass heads with adjustment and ink and pencil points; three drawing pens, pricker, tracer, wheel pen and set of four wheels, six 12-in. boxwood chain scales and offsets, 12-in. ebony rolling parallel, angles, curves, and protractor	10	0	0
750	Thirteen-inch Walnut or Oak Case, Hobb's lock, lined with silk velvet, containing the following instruments : 6-in. compass, with needle points, ink and pencil points, and lengthening bar; hair divider, ink and pencil bows with needle points, three needle point spring bows, beam compass heads with adjustment, and ink and pencil points, three drawing pens, pricker, tracer ..	5	5	0
751	Thirteen-inch Walnut or Oak Case, Hobb's lock, lined with silk velvet, containing :—6-in. double joint compass, ink and pencil points and lengthening bar, hair divider, double jointed ink and pencil bows, three spring bows, 6-in. proportional compass, beam compass heads with adjustment, and ink and pencil points, three drawing pens, road pen, pricker, tracer, knife key ..	5	15	0

The above cases will hold 12-in. Scales, Parallel Rule, Curves, Set Squares, &c.

BEST ENGLISH-MADE INSTRUMENTS IN CASES.

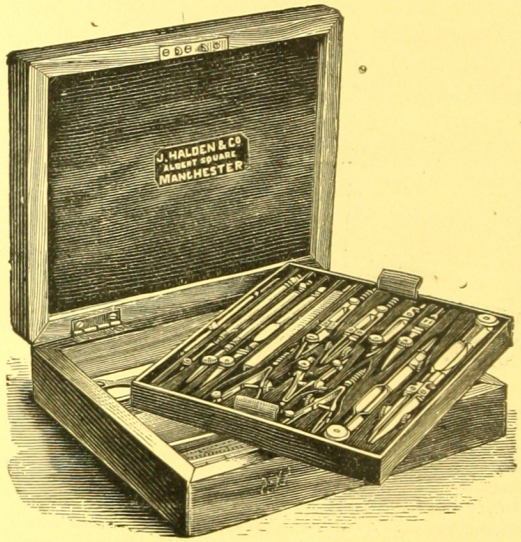


Case 752.

		£	s.	d.
752	Engineer's Case, specially suitable for hot climates; Japanned tin case with name plate, velvet lined, and containing the following extra quality electrum instruments:—6-inch compass with needle points and knee joints, ink and pencil points, lengthening bar and knife key; improved hair divider, bow pen and pencil with needle points and knee joints, set of three needle pointed spring bows, three best drawing pens, road pen and two 6-inch ivory scales or ivory parallel and protractor	4	4	0
752B	Engineer's Case, as above, but with B needle points throughout	5	5	0
753	Square Walnut or Oak Case, electrum bound, lined with silk velvet, containing the following extra finished instruments:—6-in. proportional compass, engine divided, 6-in. compass, with improved needle points, ink and pencil points, and lengthening bar; improved hair divider, ink and pencil bows, with improved needle points, three improved needle spring bows, two drawing pens, pricker, knife-key, set of three ivory architect's scales, or sector, protractor, and parallel	7	5	0

BEST ENGLISH-MADE INSTRUMENTS IN CASES.

754 Square Walnut or Oak Case, electrum bound, lined with silk velvet, containing the following electrum instruments :—Beam compass heads, with adjustment and ink and pencil points ; 6-in. compass, with needle points, ink and pencil points, and lengthening bar ; hair divider, ink and pencil bows with needle points, three needle spring bows, two drawing pens, pricker, and knife-key, set of three ivory architect's scales, or sector, protractor, and parallel .. .. £ 5 10 0



Case 755B.

755 Pupil's Complete Case (a Speciality), as follows :— Square rosewood, walnut, or oak case, with lock and key, velvet lined, containing the following superior English made electrum instruments ; 6-in. compass with double joints and needle points, ink and pencil points, lengthening bar, improved hair divider, bow, pen and pencil, with double joints and needle points, set of three spring bows with needle points, three best drawing pens, knife-key, ivory sector or protractor, and parallel ruler 4 0 0

755A Ditto, without sector and parallel 3 13 0

755B Contents as 755, with B needle points 5 0 0

756 As 755A, but plain point instruments 3 2 0

BEST ENGLISH-MADE INSTRUMENTS IN CASES.

		£ s. d.
757	Square Oak Case, containing 6-in. electrum double-jointed pencil compass, with needle point, pen leg, lengthening bar; improved hair divider, double joint needle pointed bow pen and pencil, three needle point spring bows, jointed drawing pen, and knife-key ..	3 0 0
757A	Square Mahogany Case, containing the following electrum instruments:—6-in. proportional compass, 6-in. compass, with ink and pencil points, and lengthening bar, bow pen, bow pencil, divider, set of three spring bows, three drawing pens and knife-key	2 10 0
758	Oak Case, containing the following electrum long joint instruments:—6-in. compass, with ink and pencil points, and lengthening bar; divider, ink and pencil bows, set of three spring bows, two drawing pens, ivory protractor, and parallel	2 5 0
759	Oak Case, lined with silk velvet, containing the following electrum instruments:—6-in. sector joint compass, ink and pencil points, and lengthening bar; hair divider, ink and pencil bows, two drawing pens, pricker, and knife-key, ivory parallel and protractor	2 2 0
761	Mahogany Case, containing 6-in. electrum long joint compass, ink and pencil points, and lengthening bar; ink and pencil bows, drawing pen, boxwood protractor, and ebony parallel	1 1 0

Special Cases of Instruments made up to order.

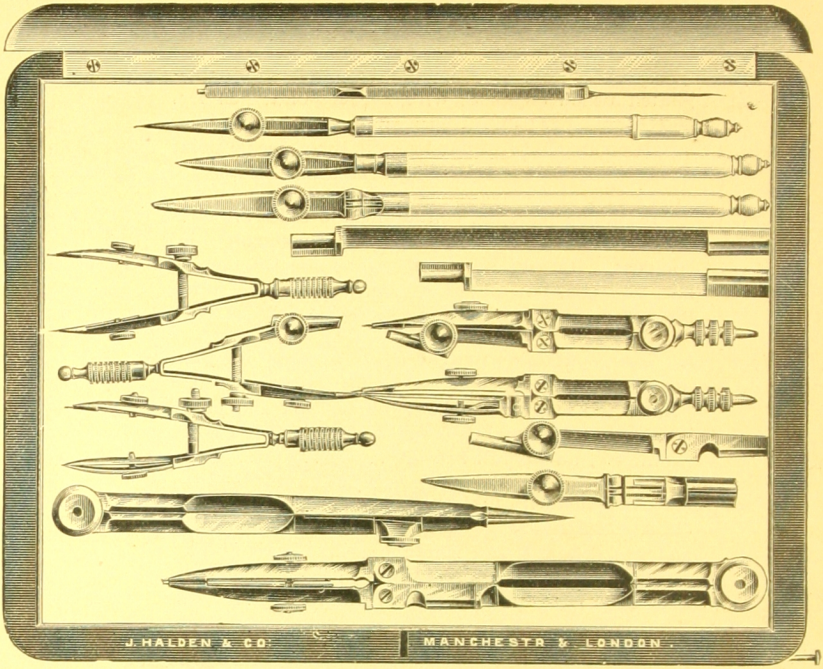
Empty Cases.

	£ s. d.		£ s. d.
No. 746	4 10 0	No. 754	1 11 6
No. 749	1 15 0	No. 755 and 757 ..	0 12 6
No. 750 and 751	1 7 6	No. 758	0 12 0
No. 752 and 752B	0 16 6	No. 759	0 8 6
No. 753	1 10 0	No. 761	0 6 0

Empty Cases can be made to order to suit various sets of Instruments.

Pocket Cases.

BEST ENGLISH MADE DRAWING INSTRUMENTS.

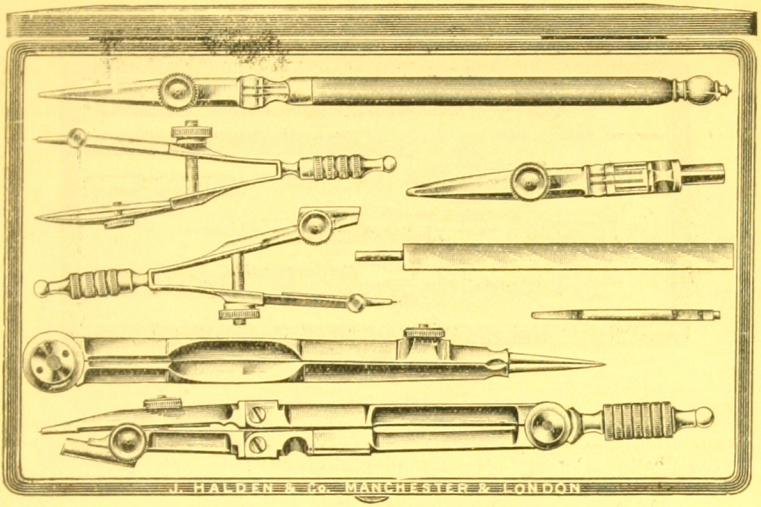


	[Case 762].	£	s.	d.
762	Russian Leather Case, with silver plate, containing the following extra quality electrum instruments :—4½-in. compass, with improved needle points, ink and pencil points, two lengthening bars, improved hair divider, ink and pencil bows, with improved needle points, set of three improved needle spring bows, two drawing pens, pricker, ivory protractor, architect's scale ..	5	12	0
763	Morocco Case, containing the following extra quality electrum instruments :—4½-in. compass, with needle points, ink and pencil points, lengthening bar, ink and pencil needle pointed bows, set of three needle spring bows, improved hair divider, two drawing pens, pricker, knife-key, and ivory protractor ..	4	0	0
764	Same as 763, but with plain points instead of needle	3	10	0
765	Morocco Case, containing the following extra quality electrum instruments :—4½-in. compass, with needle points, ink and pencil points, lengthening bar, improved hair divider, ink and pencil needle pointed bows, two drawing pens, knife-key and ivory protractor	2	17	6
766	Same as 765, but with plain points instead of needle .	2	10	6

Any of the above cases with 6-inch Instruments instead of 4½-inch, 2/6 extra.

Pocket Cases.

BEST ENGLISH MADE DRAWING INSTRUMENTS.

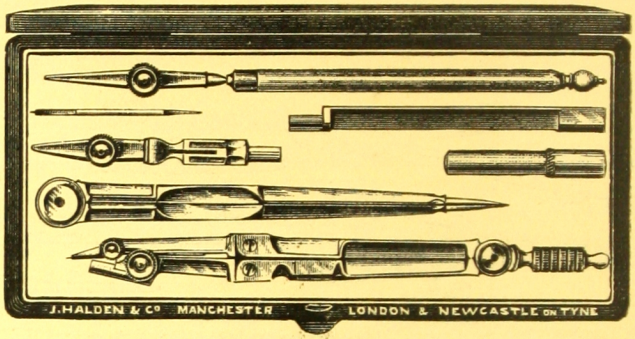


Case 769.

		£	s.	d.
768	Morocco Case containing the following electrum instruments; 4½-inch long joint compass, with ink and pencil points, ink and pencil bows, drawing pen and protractor	1	1	0
769	New Pocket Case, size 5½-in. by 3-in., containing the following extra quality electrum instruments:—4½-in. bow compass, improved pattern, sector-jointed, double knee joints, improved needle points, with pen and pencil points, lengthening bar, improved hair divider, needle-pointed spring bow pen and pencil, jointed drawing pen and bow key	1	16	0
770	Case containing instruments as above, with spring bow divider and pricker	2	2	0
771	**The Student's Pocket Case,** 5½-in. by 2½-in., covered leather, spring catch, containing 4½-in. compass, with needle points, pen and pencil legs, lengthening bar, divider, 4½-in. pen	1	7	6
772	**The Pupil's Leather Pocket Case,** 6-inch by 3-inch, spring catch, containing 4½-inch needle compass, pen and pencil legs, lengthening bar, 4-inch hair divider, needle-pointed spring bow pen and pencil, 4½-inch drawing pen	2	0	0

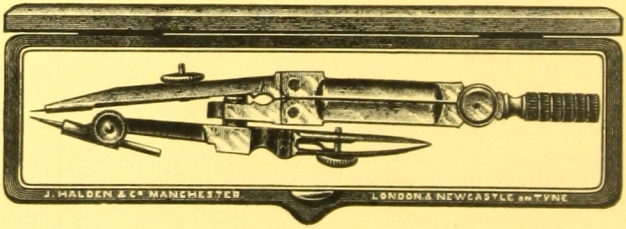
Pocket Cases.

BEST ENGLISH MADE DRAWING INSTRUMENTS.



Case 775.

		£	s.	d.
773	Leather Pocket Case containing electrum 4½-in. compass, with needle points, pen and pencil legs, lengthening bar, improved hair divider, bow pen and pencil, spring bow pen and pencil, drawing pen and knife-key	2	2	0
774	Ditto ditto, with spring bow divider	2	5	0
775	Leather Pocket Case containing the following electrum instruments:—4½-in. bow compass, sector jointed with pencil and pen legs, lengthening bar, sector jointed divider, ivory handled drawing pen, case of leads, and bow key	0	16	0

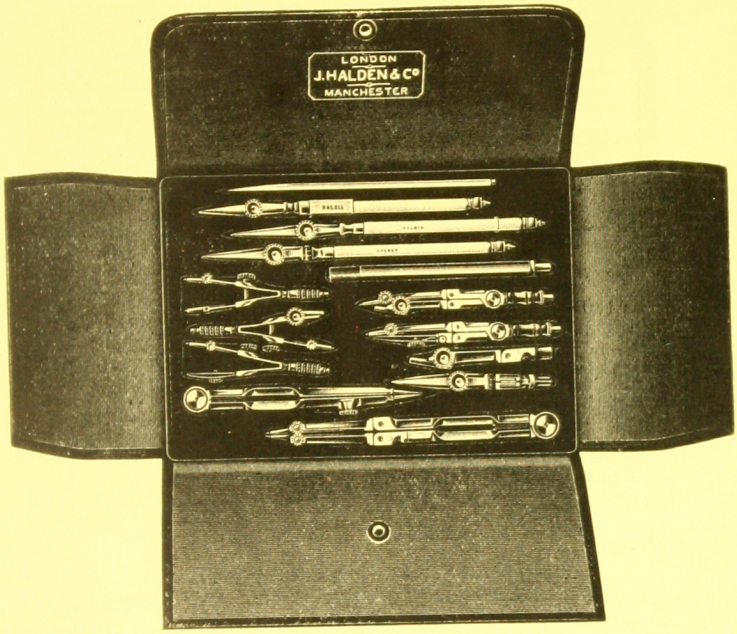


No. 780.

		£	s.	d.
780	4-in. Combined Bow Pencil, pen and divider, with improved needle point, in neat case	1	1	0
782	4-in. Combined Spring Bow Pencil, pen and divider, with improved needle point, in neat case	1	5	0

Wallet Cases.

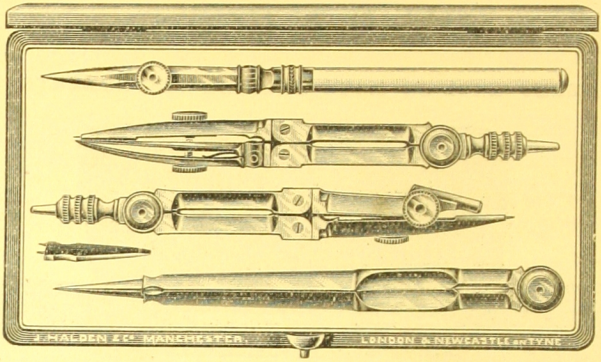
BEST ENGLISH MADE DRAWING INSTRUMENTS.



No. 776.

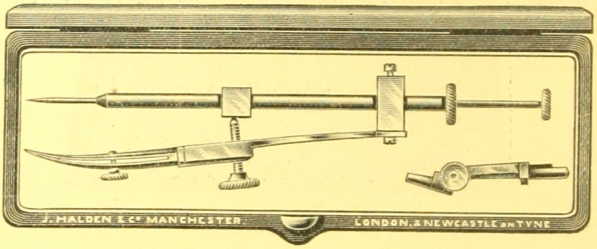
		£	s.	d.
776	Morocco Wallet Case, velvet lined, containing 4½-inch compass, with needle points and knee joints, ink and pencil points, lengthening bar and knife key; improved hair divider, bow pen and pencil with needle points, set of three needle pointed spring bows and two drawing pens and pricker.	4	5	0
776B	Morocco Wallet Case, containing instruments as above, but with B needle points throughout	5	5	0
778	Morocco Wallet Case, velvet lined, containing 4½-inch improved pattern bow pencil compass with B needle point, pen point and lengthening bar, improved hair divider, needle pointed spring bow pen and pencil, jointed drawing pen and adjusting key	2	0	0

BEST QUALITY ENGLISH MADE DRAWING INSTRUMENTS.



No. 784.

		£	s.	d.
783	Small Pocket Case containing bow pen, bow pencil, with needle points, sector joint divider and jointed pen	1	1	6
784	Ditto ditto, but improved pattern bows with improved needle points	1	8	6



No. 786.

785	Rotating Spring Bow Pen	0	8	6
786	Ditto, with pencil point, in neat case	0	12	6

Empty Pocket Cases.

For size and capacity see complete case of same number on previous pages.

		£	s.	d.
762	6-inch	1	1	0
762	4½-inch	0	18	6
763	6-inch	0	10	6
763	4½-inch	0	8	0
765	.. .. ..	0	7	6
778	Wallet Case..	9/-		

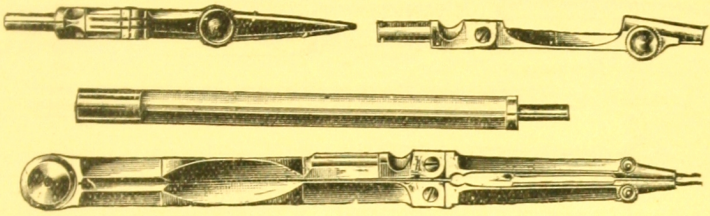
		£	s.	d.
769 and 771		0	5	0
770 and 772		0	5	6
773		0	6	0
775		0	2	6
776 & 776B Wallet Cases		0	14	6

Cases for special sets of instruments made to order at proportionate prices.

DRAWING INSTRUMENTS.

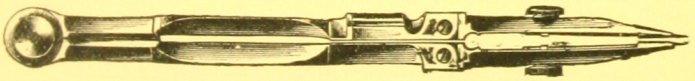
BEST ENGLISH MANUFACTURE.

ELECTRUM. **Half Sets.** ***FINEST QUALITY.***



No. 833.

		£	s.	d.
820	Bow Half Set, 4-in. pencil compass with clamp needle point, pen leg and lengthening bar	0	11	6
821	Ditto ditto, improved needle point	0	17	6
827	Half Set, 6-in. or 4½-in. compass, plain steel points, pen and pencil legs	0	7	6
828	Ditto ditto, with lengthening bar	0	8	6
829	Ditto, 6-in. or 4½-in. compass, sector joint, pen and pencil legs, lengthening bar	0	15	6
830	Ditto, with one knee joint to compass	0	17	6
831	Ditto ditto, with double knee-joints	0	19	0
833	Ditto ditto ditto, with clamp needle points	1	1	0
	Knife key for adjusting	0	1	0



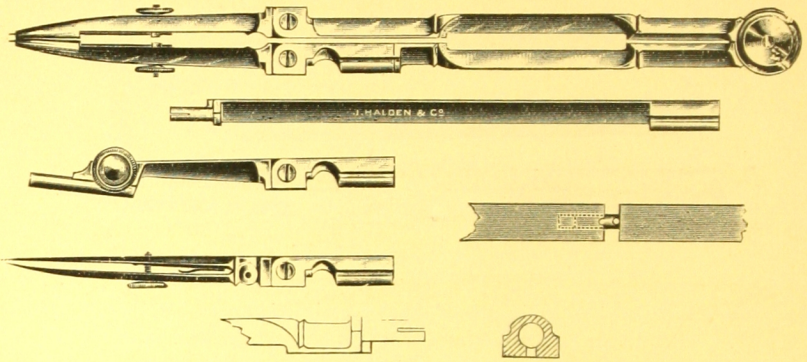
835	Half Set, 6-in. or 4½-in. compass, with improved needle points, pen and pencil legs, lengthening bar and knife key	1	14	0
836	Ditto ditto, screw-off needle points	1	14	0
837	Ditto ditto, 9-in., with needle points	2	0	0

BEST ENGLISH MADE INSTRUMENTS,

FINEST QUALITY ELECTRUM

CONE FITTING HALF SET.

(PATENT.)

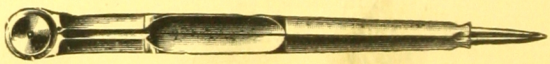


FULL SIZE OF PEG AND CORE.

The adapting leg of the compass has a spring fitting to receive the bored end of pen, pencil, dividing leg or bar—a small pin fitting in a corresponding recess preventing any lateral movement.

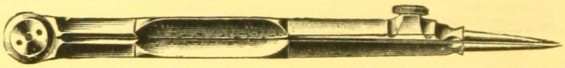
		£	s.	d.
833A	6-in. or 4½-in. Half Set, as above, with needle points ..	1	5	0
835A	Ditto ditto, with improved needle points ..	1	15	0

DIVIDERS



No. 839.

838	Steel Jointed Divider, 4-in. or 5-in.	0	2	9
839	Best Sector Jointed Divider, 4-in. or 5-in.	0	4	0



No. 842.

841	Best Sector Jointed Divider, with hair spring for fine adjustment	0	5	6
842	Ditto ditto, improved pattern	0	7	0
844	Pocket Divider, sector jointed, with sheath, 3-in., 4-in. and 5-in.	0	7	6
846	Sector Jointed Divider, 9-in.	0	11	0

DRAWING PENS.

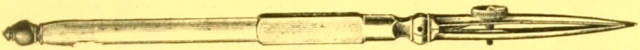
BEST ENGLISH MANUFACTURE.

850

851

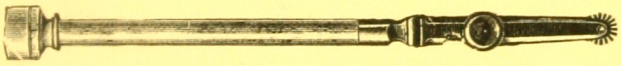
		£	s.	d.
849	Engineer's extra fine Steel Pen	0	3	0
850	Fine Steel Pen, 6-in. or 4½-in., round ivory handle ..	0	2	0
851	Ditto ditto square ditto	0	2	6

856


858

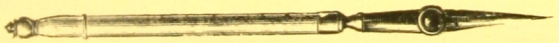
859

856	Steel and Electrum Jointed Pen, 6-in. or 4½-in., round ivory handle	0	3	3
858	Ditto ditto, square ditto	0	3	9
858A	Ditto ditto ditto with pricker	0	5	0
859	Ditto ditto, with solid steel top nib and extra strong back nib, square ivory handle	0	5	6
859A	Special Jointed Pen, solid steel throughout, round or square ivory handle, 6-in. or 4½-in.	0	5	6


862

860	Road or double pen, solid steel, round ivory handle ..	0	7	0
861	Bordering Pen, with strong round ivory handle ..	0	5	0
862	Dotting or Wheel Pen, four wheels	0	6	6

868


865

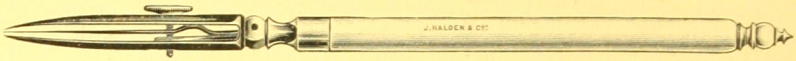
865	Improved needle point pricker, ivory handle, cavity for extra needles	0	2	3
866	Opisometer with ivory handle	0	2	6
866A	Ditto, improved pattern	0	3	6
867	Ditto ditto, divided to inches and tenths ..	0	12	0
868	Steel Tracer, with ivory handle	0	1	6
869	Crow Quill and Mapping Pens, 1 dozen, and handle ..	0	2	0

DRAWING PENS.

BEST ENGLISH MAKE.

Triple Drawing Pen.

(Patent).



This pen is provided with a centre nib which, while acting as the spring, enables it to hold considerably more ink. The flow of ink is perfectly even.

		£	s.	d.
870	The above pen, 6-in. or 4½-in., with round or square ivory handle	0	5	6

Cases of Pens.

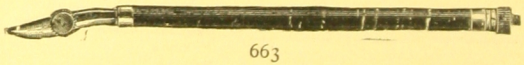
871	Neat Morocco Case, containing one jointed pen and two fine ditto, fitting one ivory handle	0	10	0
872	Neat Morocco Case, containing six steel pens, fitting one ivory handle.	0	14	0
873	Neat Morocco Case, containing six steel and electrum jointed pens of various sizes to fit one ivory handle ..	1	1	0

High Class Foreign Drawing Pens.

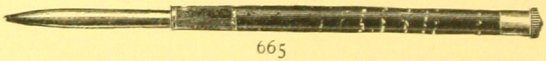
659

661

657	Jointed Pen with pricker, ivory handle, 6-in.	0	4	0
659	Ditto ditto, 5-in...	0	3	6
661	Ditto, 4-in.	0	2	6



663



665

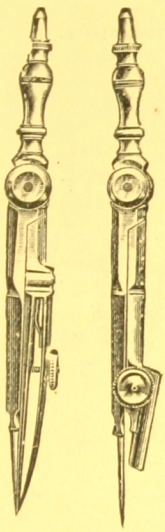
663	Special Pen for curves	0	4	6
665	Screwless Blade Pen	0	4	6
666	Fountain Pen, complete in case	0	10	6
667	Spring Drawing Pen, 5-in.	0	2	6

This pen has all the advantages of the jointed pen, yet has no joint to wear loose. It is opened for cleaning by simply releasing a spring catch and closed without the adjustment having been disturbed.

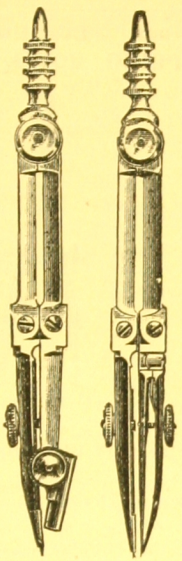
Drawing Instruments.

FINEST QUALITY ELECTRUM. BEST ENGLISH MANUFACTURE.

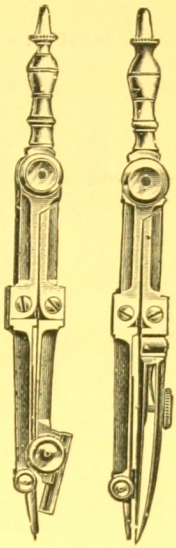
Bow Compasses.



874



880B

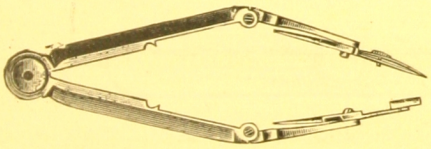


879

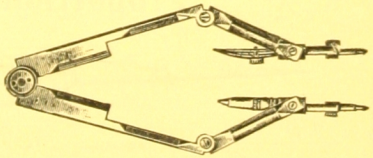
Made in two sizes :—Large 3¾ in. long ; small 3 in. long.

			£	s.	d.
874	Bow Pen or Pencil, plain steel points	each	0	3	0
875	Ditto ditto, improved pattern	,,	0	4	6
877	Ditto, with double knee-joints, plain points	,,	0	6	6
878	Ditto ditto, ,, improved pattern ...	,,	0	9	0
879	Ditto ditto, ,, with needle points ...	,,	0	7	6
880	Ditto ditto, ,, ditto, improved pattern	,,	0	10	0
880B	Ditto ditto, ,, improved needle points	,,	0	11	0
881	Ditto ditto, ,, with screw-off needle points	,,	0	11	0

Pocket Compasses.



887.



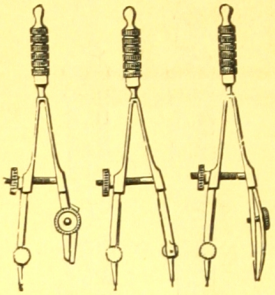
891.

		£	s.	d.
887	Napier Compass, with pen and pencil legs to revolve, plain steel points, in Morocco case	1	0	0
888	Ditto ditto, with improved needle points ..	1	5	0
889	Ditto ditto, solid silver	2	10	0
891	Ditto, with needle points (Swiss make)	0	12	6
892	Napier Pocket Divider	0	9	6
893	Pillar Compass, comprising large divider, pen and pencil compass, bow pen and bow pencil, in case	1	10	0
894	Ditto ditto, with addition of two lengthening bars	2	0	0
895	Pillar Pocket Divider	0	11	6

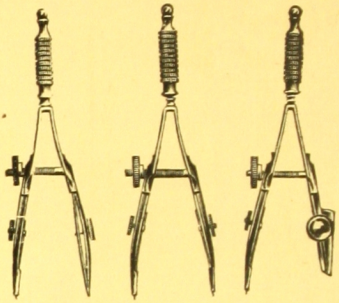
Drawing Instruments.

Finest Quality Electrum. Best English Manufacture.

SPRING BOWS.



In sizes, 3-inch and 2½-inch long.

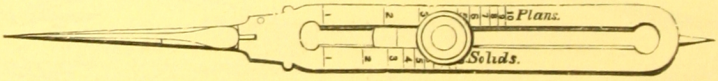


883. 884.

Best Solid Steel with Electrum Handles.

		£	s.	d.
882	Spring Bow Pen, Pencil or Divider, plain points, each	0	2	6
	Set of three, in neat case	0	8	6
883	Spring Bow Pen, Pencil or Divider, needle points, each	0	4	3
	Set of three, in neat case	0	13	6
883A	Ditto, special make, pencil socket of solid steel ..	0	16	0
884	Spring Bow Pen, Pencil or Divider, improved needle points .. .. each	0	6	6
	Set of three, in neat case	1	1	0
884B	Spring Bows, with screw between legs, needle points, set of three in neat case	1	5	0

Proportional Compasses.



897.

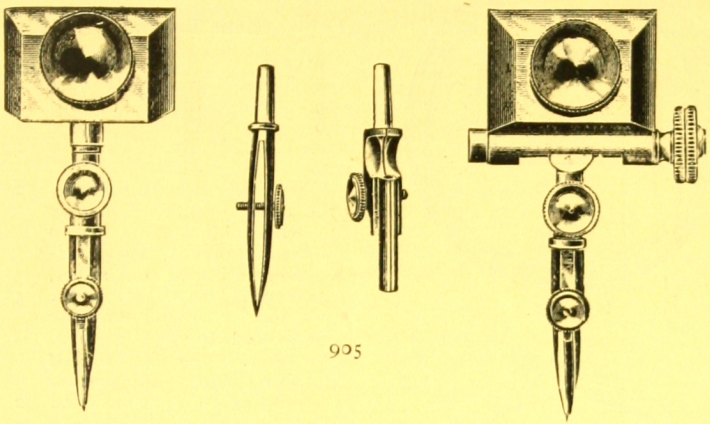
896	6-in. Proportional Compass, plain	0	12	0
897	Ditto ditto, fully divided	1	4	0
898	Ditto ditto, with adjusting bar	1	15	0
899	9-in. Proportional Compass, fully divided	1	15	0
900	Ditto ditto, with adjusting bar	2	12	0
901	Wholes and Halves, or Bisecting Compasses	0	18	6

Neat Leather Cases for above, 2s. 6d. and 3s. 6d.

Drawing Instruments.

FINEST QUALITY ELECTRUM. BEST ENGLISH MANUFACTURE.

BEAM COMPASSES.



905

			£	s.	d.
902	Beam Compass Heads with pen and pencil legs, plain steel points		0	11	0
903	Ditto ditto,	with screw adjustment	0	13	6
904	Ditto ditto	ditto, with needle points	0	17	0
905	Ditto ditto	ditto, with improved needle points	1	0	0
905A	Ditto ditto,	with special roller adjustment	0	12	6
905B	Ditto ditto	ditto, large size	0	14	6

Cases for above, 3s. 6d. and 4s. 6d.

Beam Laths, per foot, 6d. Ditto, special T section, 9d.

906	Tubular Beam Compass, three slides, complete with pen and pencil points in case, 24-in.	2	0	0
907	Tubular Beam Compass, in three sections, two plain points, two needle points, pen and pencil points, micrometer adjustment (best foreign manufacture)	1	5	0
	Morocco Case for same	0	5	0
908	Beam Compasses, ordnance pattern, 48-in.	2	5	0

TUBULAR AND TRIANGULAR COMPASSES.

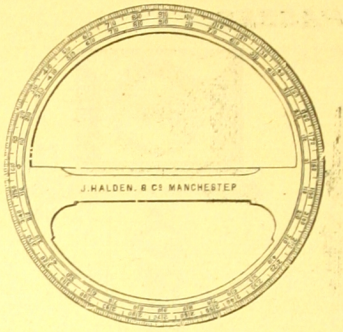
909	Tubular Compass with improved solid bars, keyed to prevent turning, plain points, 5 or 7-in.	1	12	6
910	Ditto ditto, with improved needle points	2	0	0
912	Triangular Compass, 5-in.	0	12	0
913	Ditto, with movable bar	0	15	6
914	Ditto, with sliding fitting for elliptical drawing in pencil	1	10	0

Cases for above, 3s. 6d. each.

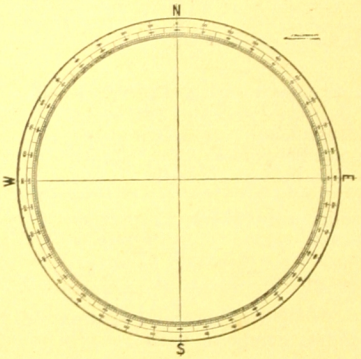
CENTROLINEADS.

915	Centrolinead, ebony, 30-in. or 42-in., with studs to work against, and brass mounts	1	0	0
916	Ditto ditto, electrum mounts	1	5	0
917	Eccentrolinead for drawing eccentric lines	0	9	0

PROTRACTORS.



No. 968.



No. 974.

Brass Protractors.

Best Engine Divided.

		£	s.	d.
968	12-in. Circular, in case	2	12	6
969	10-in. ditto ditto	2	2	6
970	9-in. ditto ditto	1	15	0
970A	6-in. ditto ditto	1	3	6
970B	6-in. ditto ditto with vernier and arm	2	5	0
970C	6-in. ditto ditto with folding arms, clamp and tangent, two verniers divided on silver, reading to 1′	5	0	0
970D	6-in. Semi-circular divided to 30′	0	10	0
970E	6-in. Semi-circular, with arm and vernier reading to 1′ in case ..	2	2	0

CELLULOID PROTRACTORS.

971	6-in. Circular	0	3	6
972	8-in. ditto	0	6	6
973	10-in. ditto	0	10	6

Semi-circular Transparent Celluloid Protractors, Prices: 4-in., 1/-; 5-in. 1/6; 6-in., 2/3.

Thin Cheap Brass Semi-circular Protractors—3-in., 4d.; 4-in., 9d.; 6-in., 1/6.

Electrum ditto, divided to ½°, 5-in., 2/3.

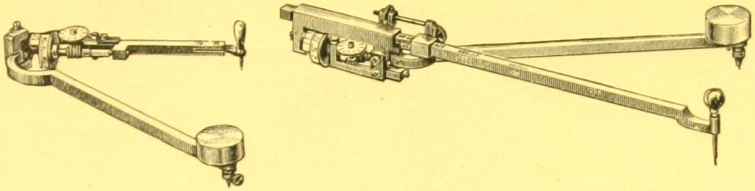
Boxwood Protractor, 6-in., 1/-; Ivory Protractor, 5-in., 4/6; 6-in., 5/-

974 Enlarged Card Protractor
Outside measurement, 20-in. × 20-in.
Diameter of outer circle, 17-in.
Diameter of inner circle, 15-in.
Outer circle is divided to quarter degree 0 to 360.
Inside circle is divided one degree 0 to 90 in quadrants — £ 0 s. 5 d. 0

975 Pupil's Card Protractor, 6-in. diameter of circle, centre cut out or left entire .. .. — £ 0 s. 1 d. 0

976 Slope and Batter Protractor (Excell's patent) specially recommended when designing retaining walls, breakwaters, railway embankments, roofs, etc.: Pearwood 3/6; celluloid 7/6; brass .. .. — £ 0 s. 10 d. 6

PLANIMETERS.



Nos. 1 and 2. Nos. 3 and 4.

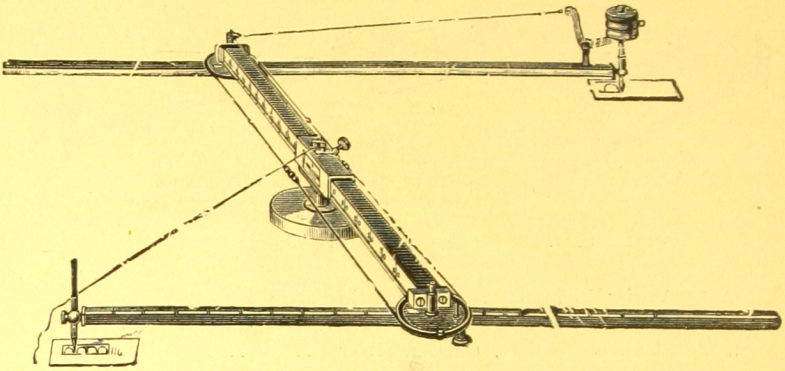
		£	s.	d.
No. 1	Amsler Planimeter, for computing areas in square inches; range, circle of 18 inches diameter, brass ..	2	5	0
,, 2	Planimeter—ditto, German silver	2	8	0
,, 3	Planimeter—arranged for computing areas in either of several units; range, circle of 24-ins. diameter, brass	2	13	0
,, 4	Planimeter—ditto, German silver	3	0	0
,, 5	Planimeter—Ditto for large areas; range circle of 38-ins. diameter, German silver	7	0	0
,, 6	Planimeter—same as No. 4 but with special arrangement for finding rapidly the mean height of indicator diagrams; range, circle of 25-ins. diameter, German silver	3	7	0
,, 7	Planimeter—for large areas; range, circle of 42-ins. diameter	6	5	0
,, 8	Planimeter—with roller working on revolving disc, brass	8	8	0
,, 9	Planimeter—ditto; range, lengthwise, 17-ins.; crosswise, 9-ins.; brass	9	9	0

INTEGRATORS.

No. 1	Amsler Integrator; brass	16	10	0
,, 1	,, electrum	19	15	0
,, 2	,, brass	25	0	0
,, 2	,, electrum	31	0	0
,, 3	,, brass	10	5	0
,, 3	,, electrum	12	5	0
,, 4	,, brass	36	0	0
,, 4	,, electrum	44	0	0

Illustrated List and Special Quotations on request.

PENTAGRAPHS and EIDOGRAPHS.

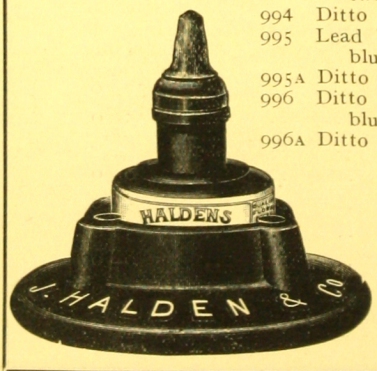


	925	£	s.	d.
920	18-in. best Pentagraph in mahogany case	6	6	0
921	24-in. ditto ditto	7	15	0
922	30-in. ditto ditto	8	15	0
	16-in. Wood Pentagraph	0	5	0
925	**Best 30in. Brass Eidograph improved, complete in mahogany case ... ...**	**14**	**0**	**0**
925A	36-in. ditto	16	0	0
	Hart's Patent Tunnel Pentagraph Profiling Instrument for Railway Engineers	45	0	0
	Hart's Patent Sewer Pentagraph Profiling Instrument for Civil Engineers, &c.	30	0	0

FULL PARTICULARS SENT ON REQUEST.

Brick Gauges, Weights, &c.

		Each. s.	d.
992	Horn Centres .. .. 2/- per doz.	0	2
993	Brick Gauges, $\frac{1}{4}$-in. and $\frac{1}{8}$-in. Scales, with two pairs of Points	2	0
994	Ditto ditto, with four pairs of Points	4	0
995	Lead Weights, 2lb. 3 × 2 × 1, covered blue baize	2	0
995A	Ditto ditto, ditto covered leather	2	6
996	Ditto ditto 2lb. $5\frac{1}{4}$ × $2\frac{1}{4}$ × $\frac{1}{2}$, covered blue baize	2	0
996A	Ditto ditto ditto covered leather	2	6

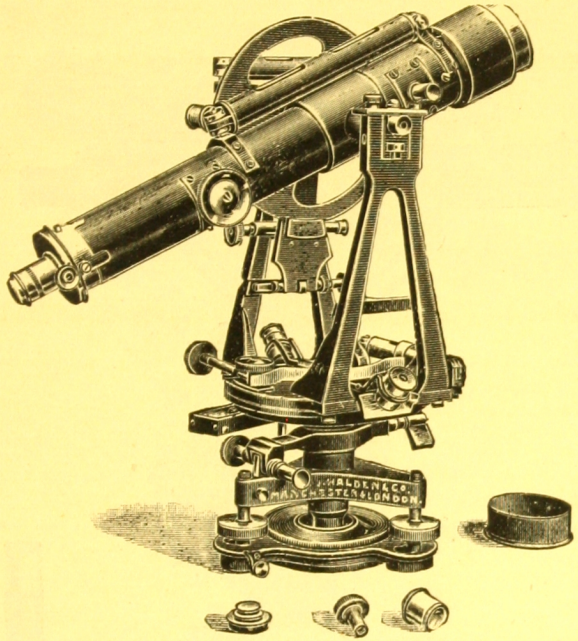


Combined Ink Bottle Stand, and Paper Weight.

Complete with bottle of "Raven" Ink.

Diameter of base $4\frac{1}{4}$in., weight $1\frac{1}{2}$lbs. 1 6

Tacheometer.



THIS Instrument has of late years come into very general use abroad in place of the ordinary Theodolite. With it surveys can be made far more rapidly and accurately.

It consists of a high-class Theodolite constructed with an Anallatic Telescope; with this Telescope distances can be calculated with the greatest accuracy, as the error, which is inevitable when using "Stadia Webs" with the ordinary Theodolite Telescope, is obviated by the Anallatic Lens.

The webs are adjusted to read 1 in 50, 1 in 100, and 1 in 200.

The Telescope is made of much greater power than is usual with Theodolite Telescopes. In the 5-in. size the object glass has a clear aperture of over 1¾-inches, and a focus of 14 inches; three eye-pieces are supplied, having powers of about 10, 20, and 40 diameters, so that very fine readings in the staff can be taken.

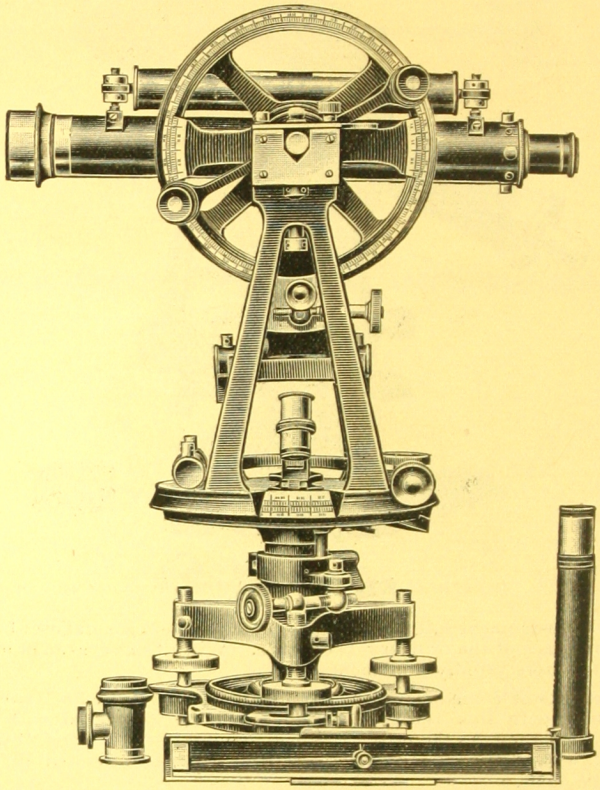
The usual method of measuring with the chain, besides being tedious, is always inaccurate, and at times well nigh impossible, unless the surface of the ground is truly level and free from obstacles, so that a Surveyor will readily appreciate the ease and rapidity with which measurements can be made with the Tacheometer.

The whole instrument is constructed after the most approved designs with all the latest improvements, including centring locking plates for accurately adjusting over a given spot on the ground after setting upon the tripod.

5-inch Tacheometer as above, reading to 20″ or 30″ £36 0 0

Fitted with spring tangent screws, trough compass, protected dividing.

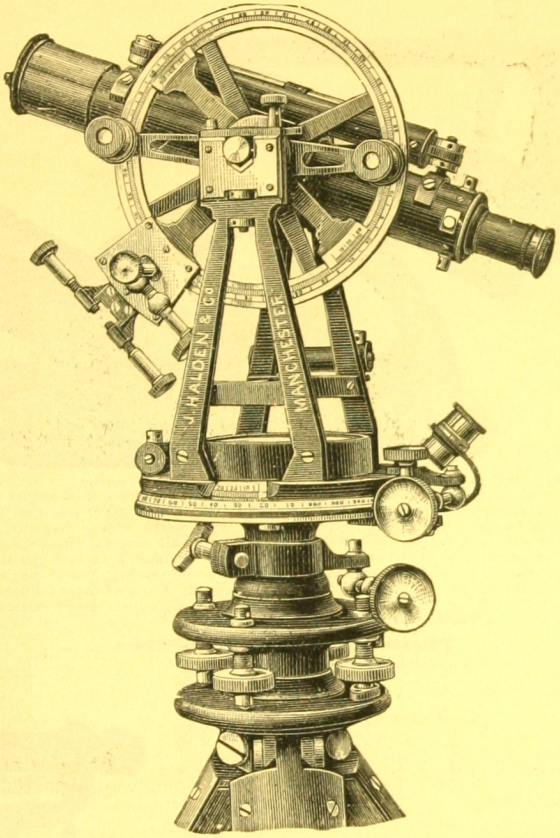
Improved Transit Theodolite.



		£	s.	d.
£ 926	5-in. Transit Theodolite, improved pattern, divided on silver to 30′ with verniers reading to 1′ light construction, two microscopes and verniers to both circles, outer ring dividing covered ; three-screw and locking plates, with centring arrangement ; improved tangent screws, packed in mahogany case with tripod stand. Weight with tripod, 27 lbs.	26	10	0
926A	6-in. as above, divided to 20″. Weight with tripod, 32 lbs.	29	10	0

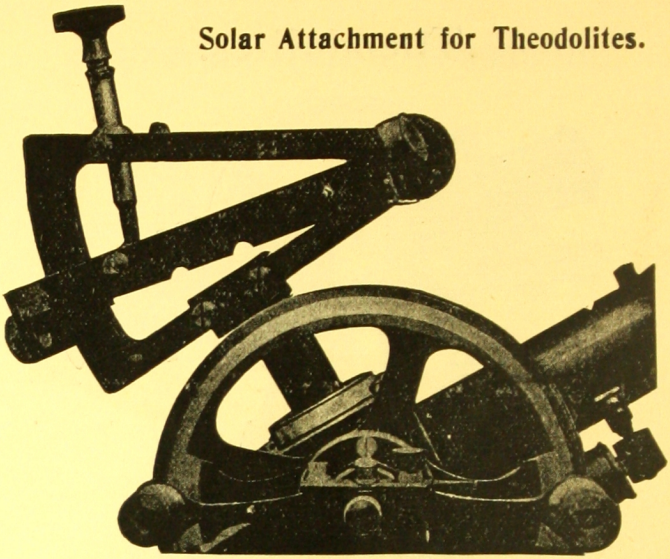
The above instruments are fitted with a Trough Compass, having an extra long needle which is far more accurate, and can be used to check and verify readings.

Theodolites.



		£	s	d.
927	5-in. Transit Theodolite, best workmanship and finish, bell-metal centres; achromatic telescope, erect and inverting eyepieces, vertical and horizontal circles, divided on silver to 30′, with verniers reading to 1′; two microscopes to each circle, three clamps and three tangent screws, packed in mahogany case, with mahogany tripod stand. Weight with tripod, 27 lbs.	23	10	0
	4-in. as above. Weight with tripod, 23 lbs.	22	0	0
	6-in. as above, divided to 20″. Weight with tripod, 32 lbs...	26	10	0

Solar Attachment for Theodolites.



This attachment is largely used in America, its use being compulsory in all State surveys. With it the true or astronomical meridian can be determined, and horizontal angles therefore can be set off with minuteness and accuracy from a direction which never changes, and which is unaffected by attraction of any description. In all instruments with a magnetic needle, the accuracy of the horizontal angles indicated, and therefore of all observations, depends upon the delicacy of the needle and the regularity with which it assumes a certain position, viz., the magnetic meridian. Error is liable to occur through the pivot wearing, loss of magnetism in the needle, local attraction, etc., and the effects of the sun's rays. From all these influences the solar attachment is free. It can be fitted to any of our Transit Theodolites, having vertical circle with clamp and tangent. ***Price, £15.***

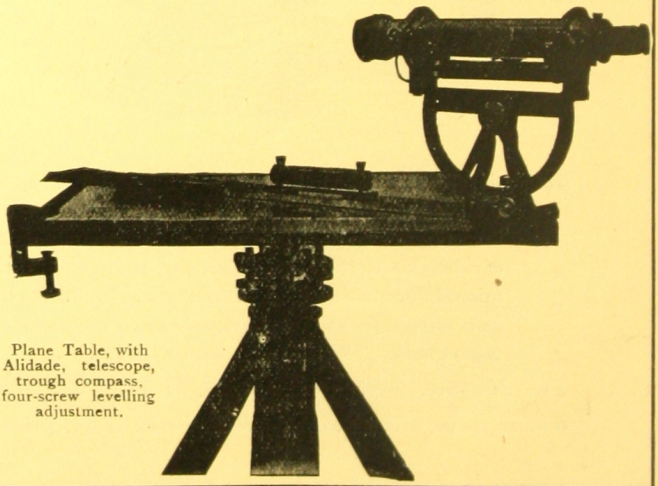
Plain or Y Theodolites.

	£	s.	d.
4-inch, best workmanship and finish, divided on silver reading to 1′	18	10	0
5-inch as above	21	10	0
6-inch, as above, divided to 20″	24	10	0

Plane Tables

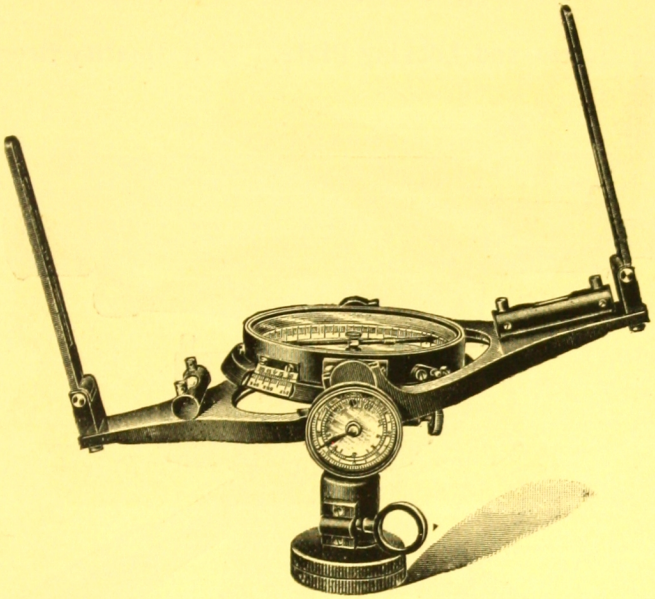
Plane Table, board 13½ in. x 11-in., with trough compass, sight rule and straight-edge, complete with tripod cover & sling straps. Pattern adopted by British Government. ***£5 5s. 0d.***

Ditto, with Alidade reading to 1 minute, with telescope and collars, trough compass, two levels, arrangement for clamping paper on table, with four-screw levelling adjustment and clamp, complete with tripod and case. ***£17 10s. 0d.***



Plane Table, with Alidade, telescope, trough compass, four-screw levelling adjustment.

Mining Dials.



No. 949C.

		£	s.	d.
948	5-in. Plain Mining Dial with folding sights, two bubbles, ball and socket joint, complete in case, with jointed legs	7	17	6
948A	6-in. ditto ditto ditto	9	9	0
949	5-in. Best Circumferentor, with folding sights, two bubbles, rackwork movement, vernier reading to 3 minutes with graduated cover, ball and socket joint complete in case, with jointed legs	11	11	0
949B	6-in. ditto ditto ditto	12	12	0
949C	5-in. Improved Hedley Dial, with outside vernier reading to 3 minutes, slow motion tangent screw and clamp, cross bubbles, vertical arc, ball and socket joint complete in case, with jointed legs	17	10	0
949D	6-in. ditto ditto ditto	18	18	0

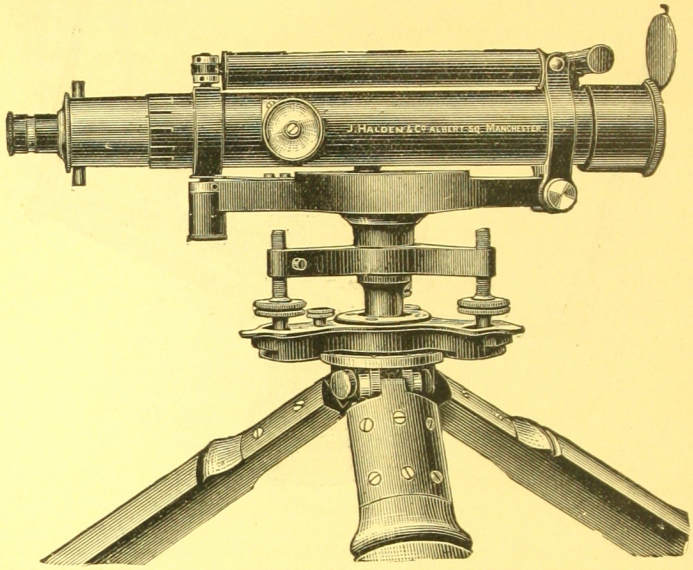
Sliding legs can be supplied with any of the above dials in place of jointed legs, without extra charge.

Mining Dials constructed in Aluminium with gun metal centres at an extra cost of 25%.

Mining Dials Repaired and Adjusted.

RELIANCE DUMPY LEVEL.

Three Screw and Locking Plate. Best Quality Bronzed.



927A

This Level is of the most improved construction, and is recommended for rapid and accurate work. The usual parallel plates and screws are superseded by a tribrack with three adjusting screws and locking plate, obviating all strain on the centre. Price includes high and low power eye-pieces, mahogany case and tripod.

		£	s.	d.
927A	12-in. with Compass (engine divided aluminium ring) Weight with tripod, 22 lbs.	13	10	0
	12-in. without ditto 22 lbs.	12	0	0
	14-in. with ditto 23 lbs.	14	10	0
	14-in. without ditto 23 lbs.	13	0	0

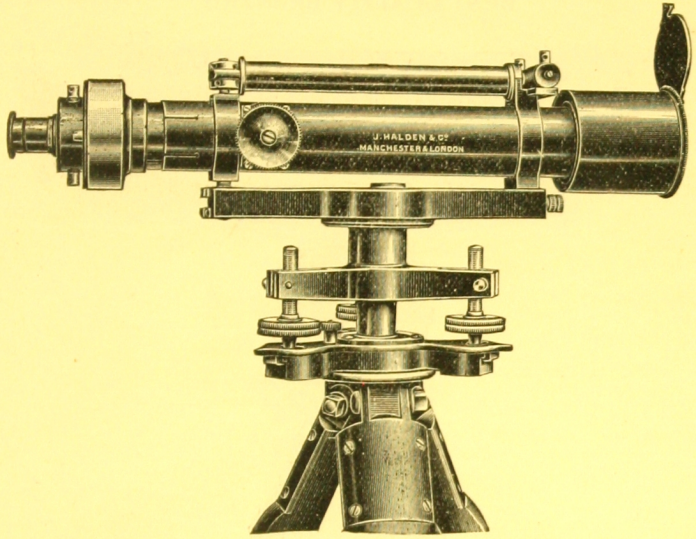
Telescopic in place of Round Tripod, 10/- extra.

Aluminium Reliance Levels.

927B	12-in. with Compass.	Weight of Level, 4 lbs. ..	15	0	0
	12-in. without	ditto 4 lbs. ..	13	10	0
	14-in. with	ditto 4½ lbs. ..	16	10	0
	14-in. without	ditto 4½ lbs. ...	14	16	0

NEW REVERSIBLE LEVEL.

"CUSHING'S" PATENT.



This instrument combines the accurate adjustment of the Y Level with the more solid construction of the Dumpy. The eyepieces and object ends are interchangeable, so that they can be reversed (which is equivalent to turning the telescope end for end in the Y pattern).

The Level is fitted with locking plate, etc., and is of the same improved construction as the "Reliance" Level.

The Tripod is also of the latest pattern with Key Cap.

Price includes high and low power eyepieces, mahogany case and tripod.

	£	s.	d.
14-in. without Compass	14	10	0
14-in. with Compass (Engine divided Aluminium Ring) ...	16	0	0

Supplied also with the ordinary 4-screw Parallel Plates at the same price.

"Y" LEVELS.

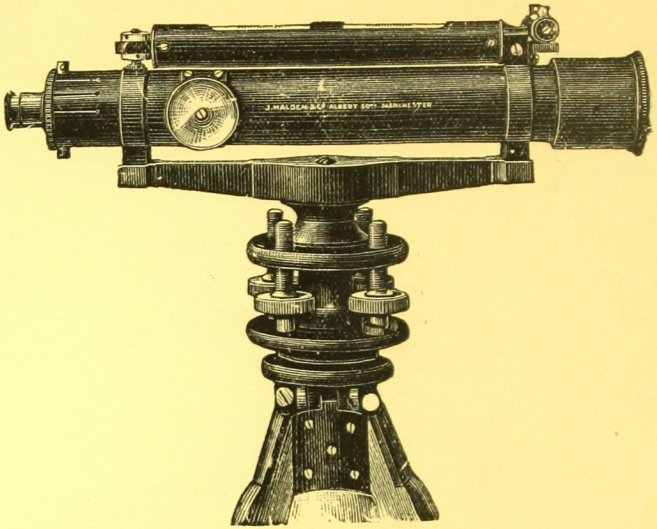
ORDNANCE PATTERN.

927C	14-in., best quality, Y Level, with clamp and tangent screws, 3-screw and locking plate, with compass (needle 3-in. with aluminium ring); weight with tripod, 23 lbs.	15	10	0
927C	Ditto ditto without compass	14	0	0
	On usual Parallel Plates, 4 screws.			
927D	14-in. with compass; weight with tripod, 23 lbs. ...	14	10	0
927D	Ditto, without compass, ditto ditto	13	0	0

Telescopic Tripod in place of Round Tripod, 10/- extra.

Improved Dumpy Level.

BEST QUALITY BRONZED.



No. 933.

Price includes high and low power eyepieces, mahogany case and tripod.

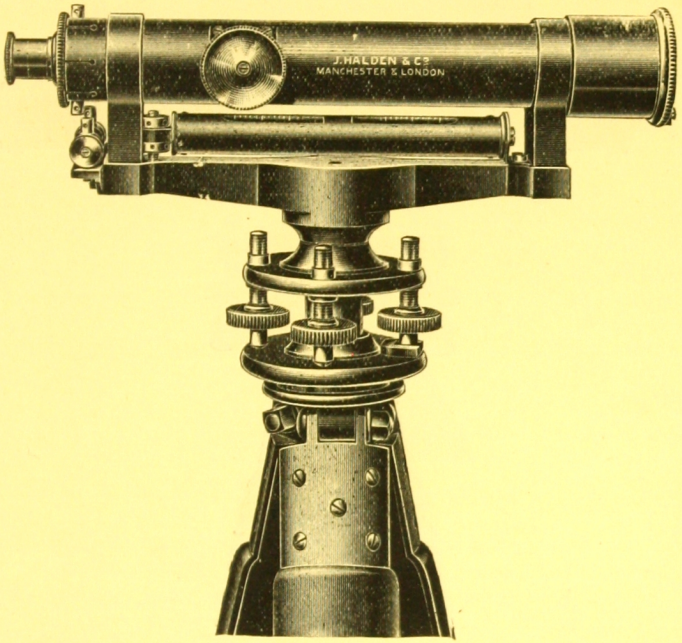
			weight with tripod.	£	s.	d.
930	12-in. with Compass (Engine divided Aluminium Ring)	.. .. ..	21 lbs.	12	10	0
931	12-in. without	ditto ..	21 lbs.	11	0	0
932	14-in. with	ditto ..	23 lbs.	14	10	0
933	14-in. without	ditto ..	23 lbs.	13	0	0
934	16-in. with	ditto ..	25 lbs.	16	10	0
935	16-in. without	ditto ..	25 lbs.	15	0	0

Aluminium Improved Dumpy Level.

			weight with tripod.			
930B	12-in. with Compass (Engine divided Aluminium Ring)	.. .. ..	4 lbs.	14	0	0
931B	12-in. without	ditto ..	4 lbs.	12	10	0
932B	14-in. with	ditto ..	4½ lbs.	16	0	0
933B	14-in. without	ditto ..	4½ lbs.	14	10	0

Telescopic in place of the usual Round Tripod, 10/- extra.

New Four-Screw Level.



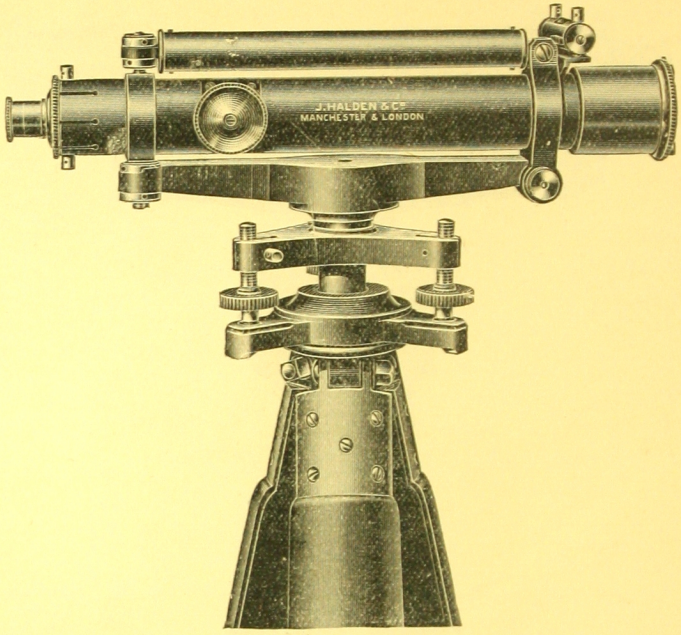
This Level is of similar design to the Improved Dumpy, but the bubbles are fixed below the telescope. The bubbles can very easily be seen, and the telescope being over them acts as guard.

Price includes high and low power eyepiece, mahogany case and tripod.

			£	s.	d.
929A	12-in. Level with Compass (Engine divided Aluminium Ring)		13	0	0
929B	12-in. Level without	ditto ..	11	10	0
929C	14-in. Level with	ditto ..	14	10	0
929D	14-in. Level without	ditto ..	13	0	0

Telescopic in place of Round Tripod, 10/- extra.

Improved Three-Screw Level.

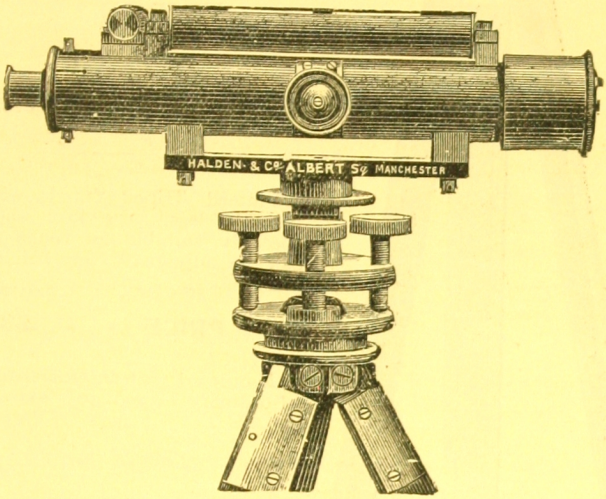


This Level is of similar design to the "Reliance" Level, but has in place of the "Locking Plate" a non-detachable plate with special spring attachment obviating all shake in the screws. The instrument is easily and quickly levelled, and its great rigidity without strain on the centre enables an extra sensitive bubble to be used.

Price includes high and low power eyepiece, mahogany case and tripod.

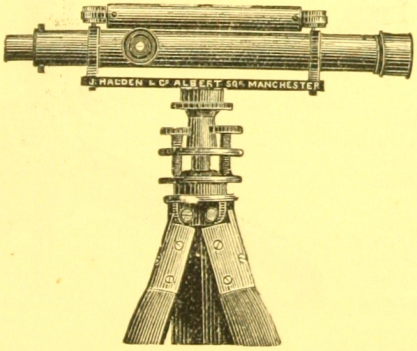
		£	s.	d.
928A	12-in. Level with Compass (Engine divided Aluminium Ring)	14	0	0
928B	12-in. Level without ditto	12	10	0
928C	14-in. Level with ditto	15	0	0
928D	14-in. Level without ditto	13	10	0

Excelsior Level.



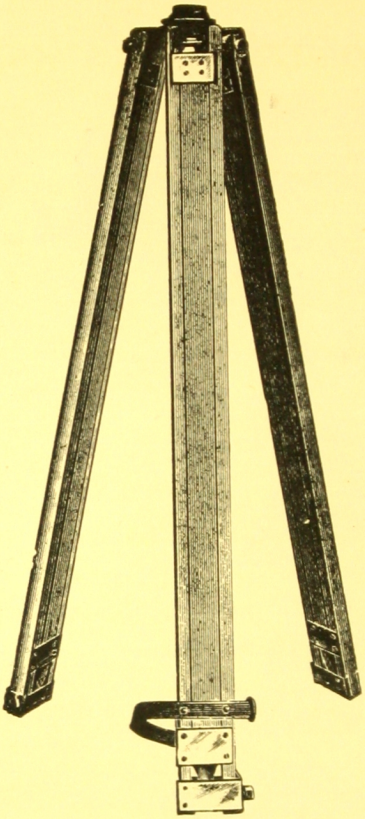
HIGHLY COMMENDED.

		£	s.	d.
936	12-in. Excelsior Level, complete with tripod and mahogany case; weight with tripod, 17 lbs.	7	10	0
936A	Ditto, with compass	9	0	0



Desideratum Level.

		£	s.	d.
937	12-in. Desideratum Level, tripod stand, in mahogany case, complete; weight with tripod, 11 lbs.	4	17	6



TELESCOPIC TRIPOD

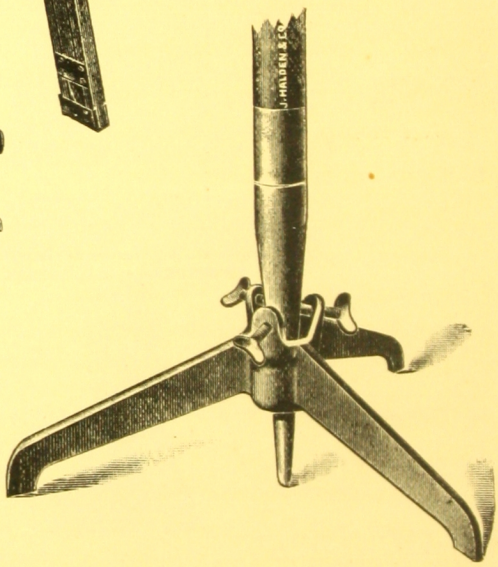
For Levels,

Theodolites, etc.

Framed Tripod Stand, with adjustable legs, very firm and rigid, specially suitable for rough ground, can be adjusted to any height up to 5 feet.

PRICE - - £3.

If ordered with instrument in place of ordinary Tripod, 10/- extra.



This useful adjunct to the Surveyor's Outfit is a recent invention likely to command much attention.

The Trifoot permits of Ranging Pole's facile use in Streets, Hard Roads, and on Walls.

The Ranging Pole is held quite perpendicular by the Screws which clamp the pole in the Trifoot.

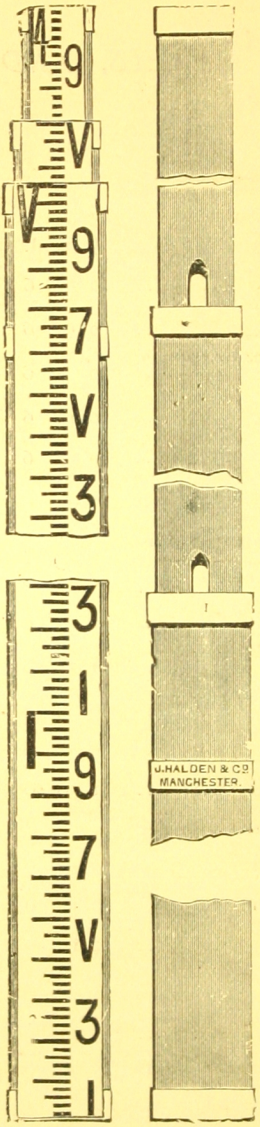
THE RANGING POLE TRIFOOT.

PRICE - - - 5/-

EXTRAS FOR THEODOLITES, LEVELS, AND MINING DIALS.

	£	s.	d.
Diagonal Eyepiece	0	17	6
Erecting ,,	0	17	6
Inverting ,, high or low power	0	7	6
Glass Diaphragm with stadia lines	0	12	6
Iridium Points	0	7	6
Metal Wall Tripod	1	5	0
Astronomical Appendage, consisting of illuminated axis, striding level, lantern, and diagonal eyepiece	4	4	0
Leather Overall Case, for Theodolites	2	5	0
Ditto ditto, for levels and dials	1	15	0
Hand Straps,	0	4	0
Extra length for Shoulder Strap	0	2	6
Reflecting Cap	1	0	0
Framed Tripod Stand, with adjustable legs, very firm and rigid, specially suitable for rough ground	3	0	0
Framed Telescopic Stand (in place of round Tripod)	0	10	0
Extra Tripods for Levels and Theodolites	2	10	0
Extra Set of Legs for dial, jointed	2	0	0
Extra Set of Short legs for Dial, not jointed	1	10	0
Telescope fitted to Mining Dial, interchangeable with sights	5	0	0
Hoffman Head, fitted to any instrument, with clamp and tangent screw	3	10	0

Theodolites, Levels, and Mining Dials cleaned, repaired, and carefully adjusted.—Workshops, Manchester.



IMPROVED SOPWITH. BACK VIEW OF STAFF.

The large Numerals at left hand are painted red.

940.

Levelling Staves.

Painted to any reading required.

		£	s.	d.
940	14-feet strong Mahogany Box, bound in brass, painted figures, Sopwith pattern	2	5	0
941	16-feet ditto ditto	2	18	0

940 and 941 can also be supplied with feet figures in red repeated for greater facility in reading.

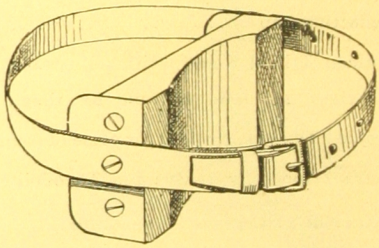
942	14-feet ditto, Carrick's pattern	2	10	0
943	16-feet ditto ditto ..	3	0	0
944	14-feet ditto, inverted Sopwith pattern	2	10	0
945	16-feet ditto ditto	3	0	0
945A	Patent 14-feet "Compact" Levelling Staff, when folded up all readings are protected	3	10	0
945B	16-feet ditto	4	4	0
946	Canvas Case for Staves.. ..	0	12	0
947	Ditto ditto for pair, or for Sta e and Tripod	0	19	0

Staves repainted and repaired.

J. HALDEN & CO.'S

NEW

Levelling Staff Protector.



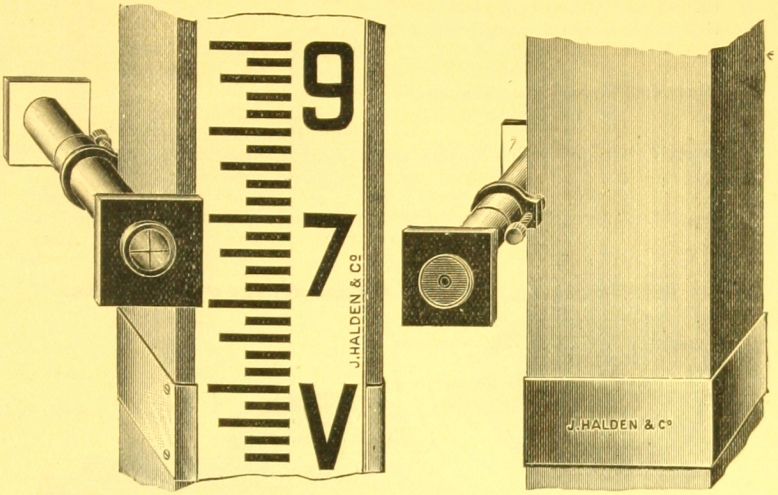
947A

The advantages when using the above Protector will be at once evident.

The brass flanges fit over the sides of the staff, and the level stand is placed in the hollow on the opposite side; the whole is then strapped together. The face of the staff is thereby protected from wear and injury.

Price per pair - 4/6.

LEVEL STAFF TELL-TALE.



This valuable invention is indispensable for Stadia work or Tacheometry. With this instrument the Surveyor can at once determine if Levelling Staff is held at right angles to line of sight.

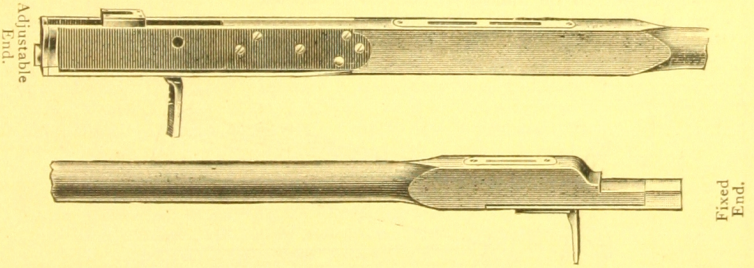
It also enables the assistant to hold staff in correct position without directions from the Surveyor.

Superior make and finish, Price, 22s. 6d.

The "FOOTNER" Railway Permanent Way Gauge.

This instrument will be found invaluable for Engineers and Inspectors who require an accurate gauge

It consists of a light polished mahogany bar, with steel fitting and countersunk level, as shown in illustration.



The gauge is formed by two rigid metal projections, one of which is fixed, and the other adjustable, fitted with a finely divided scale.

The fixed projection, when not in use, may be folded.

In obtaining the super-elevation of the rail, a swivel pin is provided, upon which is marked a scale reading to ½ths of an inch.

When the pin is not required it may be folded inside the woodwork of the gauge.

The adjustable gauge will be found most useful, as it is often required to take accurate gaugings through points and crossings, and on sharp curves where the gauge should be either tight or slack.

Price - - £5 10s. 0d.

Spirit Levels.

Pocket Spirit Level, in case .. .. £ 0 1 0

Rosewood Spirit Levels, with brass plates

6-in.	9-in.	12-in.	15-in.
2s.	3s.	4s. 6d.	6s. 6d.

Brass Lacquered Spirit Levels, in case—

4-in.	6-in.	9-in.	12-in.
1s. 6d.	2s.	3s.	4s.

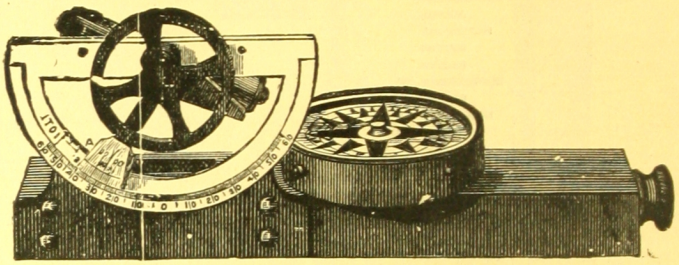
Brass Lacquered Spirit Levels, with divided tubes, in case—

4 in.	6-in.	9-in.	12-in.	15-in.
2s. 6d.	3s. 3d.	5s.	7s.	9s.

Brass Lacquered Spirit Levels, with adjusting screw-spring, in wood case—

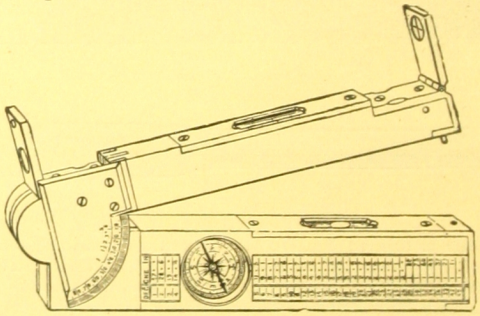
6-in.	9-in.	12-in.
7s.	10s. 6d.	13s.

Reflecting and Clinometer Levels.



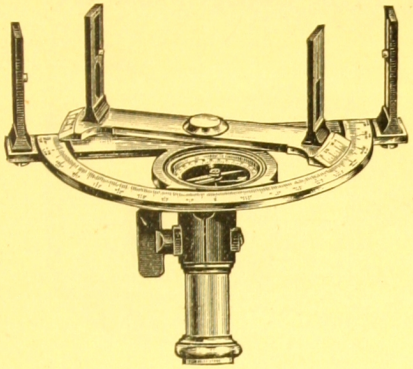
No. 939A.

		£	s.	d.
938	Pocket Reflecting Level	0	12	6
938A	Patent Telescope Clinometer Level, aluminium divided ring, complete in case	4	4	0
939	Abney Level and Clinometer, in Morocco case	1	14	0
939A	Ditto ditto, with Compass	2	0	0
939B	Ditto ditto, Improved form with circular base on which the instrument rotates enabling horizontal angles to be measured, complete, in case	2	12	6
939C	Sight Compass and Clinometer, 3-in.	1	5	0



953	Pocket Clinometer Rule, boxwood with brass mounts, two spirit levels, sights, bar needle compass, engine divided, in case	1	15	0
953A	Ditto ditto, best make, with flush vernier and swing compass, in case	2	0	0
954	Pocket Clinometer Rule, boxwood with brass mounts, one spirit level and compass, in case	0	19	6

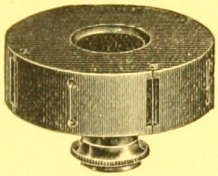
Semi-Circumferentors.

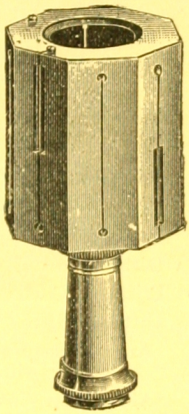


950 Semi-Circumferentor with revolving and fixed sights, 2 Verniers, Compass, ball & socket joint, complete in case, with tripod.. £2 0 0

951 Ditto, with addition of Level.. .. £2 10 0

Cross Staff Heads, Optical Squares, Etc.





		No. 956.	No. 957.	£	s.	d.
956	Cross Staff Head, in case and stand complete			0	15	6
957	Ditto ditto ditto, 2⅜-in., 7s. 6d.; 2⅝-in., 10s.; 3-in.			0	12	0
957A	Ditto ditto ditto with compass, 2⅜-in., 12s.; 3-in.			0	15	0
958	Ditto ditto ditto, with centre, 2⅝-in, 10s. 6d.; 3-in.			0	17	6
959	Ditto ditto ditto, with compass and tripod stand			1	1	0
960	Ditto ditto ditto ditto, with divided circle and vernier and tripod stand			2	0	0
961	Optical Square, in case			0	15	0
962	Ditto ditto, with adjustment			1	2	0
	Viameter, recording to 20,000 yards			5	10	0
	Pedometer, recording distance walked, watch size; to 12 miles, 10s. 6d.; to 100 miles, 14s. 6d.; extra quality			0	17	6
	Pedometer, solid silver, to 12 miles, ...			2	2	0
	Pocket Magnifiers, 1s., 1s. 6d., 2s.			0	2	6

Plumb Bobs.

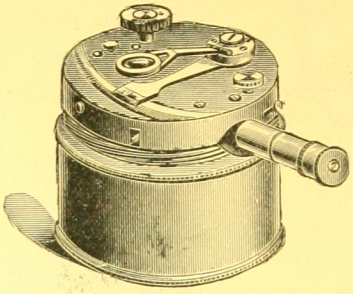
955 Plumb Bobs with steel points.

3 oz.	4 oz.	6 oz.	8 oz.	12 oz.	1 lb.	1½ lb.	2 lb.
s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1 6	2 0	2 6	3 6	4 6	6 0	8 6	10 6

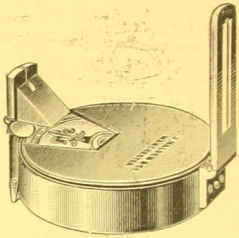
955A Best quality Bronzed Plumb Bobs 5/-

955B Ditto ditto, with point to reverse for carrying 6/6

Box Sextants, Prismatic Compasses, &c.



No. 964.

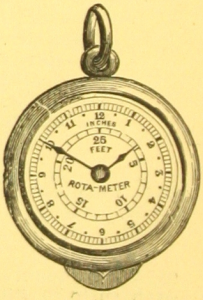


No. 965.

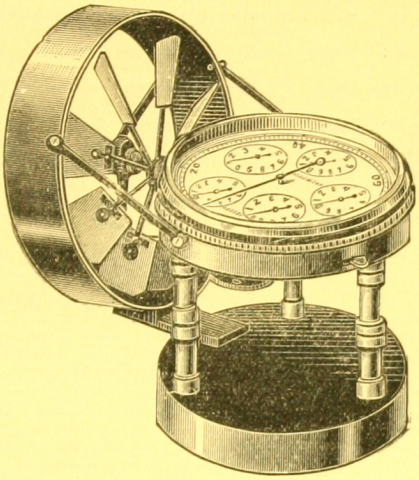
		£	s.	d.
963	Box Sextant, divided on silver, in leather sling case ..	3	10	0
964	Ditto ditto, with Telescope	4	4	0
965	Prismatic Compass, 2½-in., in leather sling case ..	1	17	6
965A	Ditto ditto, 3½-in.	2	7	0
966	Prismatic Compass and Clinometer combined, 3-in. ..	3	15	0
966A	Ditto ditto, 4-in. ..	4	10	0
	Azimuth shades and mirrors to any of the above—2½-in. 12s. 6d.; 3-in. 14s. 6d.; 3½-in. 16s. 6d.; 4-in. 17s. 6d.			
	Aluminium Compass Rings, engine divided, extra—2½-in. 15s.; 3-in. 20s.; 3½-in. 22s. 6d.; 4-in. 25s.			
967	Telescopic Tripod, with ball and socket joint	1	5	0
967A	Ditto ditto, aluminium	1	10	0
	Military Prismatic Compass, 2-in. pearl dial, luminous centre, in leather case	3	3	0
	Sight Compass and Clinometer combined, 3-in. ..	1	5	0
	Pocket Compasses, box pattern, from	0	2	0
	Ditto, watch form, from	0	3	6
	Ditto ditto, Hunter case from	0	6	6

Rotameters.

	s.	d.
Nickel or Gilt	5	0
Solid Silver	8	6
Nickel, with Ivory Handle	6	6
Nickel, large size, specially designed for speed counting card dial	5	6
Ditto ditto enamel dial in case ..	7	6



Anemometers.



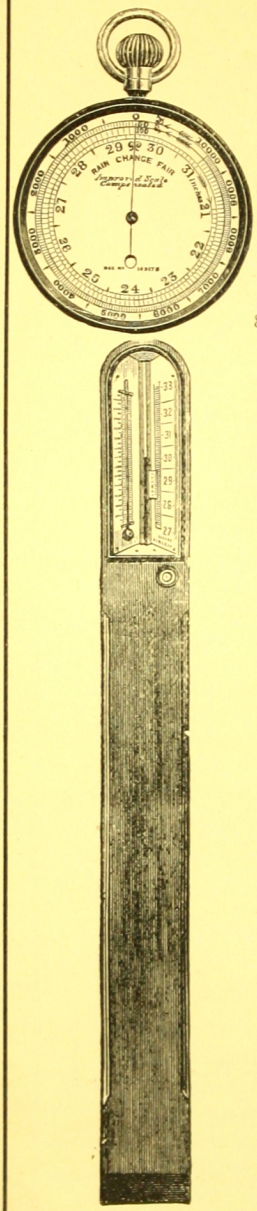
For measuring the velocity of currents of air in mines, ventilators, flues, sewers, etc.

	£	s.	d.
Portable Air Meter Zero, setting to 1,000 feet, complete in case	3	3	0
Ditto ditto, 6 dials, to 10,000,000 feet	4	4	0
Biram's Anemometer, two dials, reading to 1,000 feet, 4-in., in case	2	12	6
Ditto ditto four dials, reading to 100,000 feet, 4-in., in case	3	0	0
Ditto ditto ditto ditto 6-in., in case ..	3	15	0
Ditto ditto, six dials, reading to 10,000,000, 6-in., in case	4	15	0
Ditto ditto, pocket size, two dials, reading to 1,000 feet, in case	4	4	0
Robinson's Anemometer, improved form, ball bearings, reading to 500 miles, Zero setting	5	5	0

Anemometers for Special Work made to order.

Barometers.

BEST ENGLISH MAKE.



		£	s.	d.
84	Pocket Aneroid, gilt case, silvered dial, with altitude scale to 8,000 feet in case	1	5	0
85	Ditto ditto, compensated	1	15	0
85A	Ditto ditto ditto, extra quality	2	5	0
86	Ditto ditto ditto keyless action	3	5	0
87	Improved Engineering and Surveying Aneroid, 3-in. silvered dial, compensated, with altitude scale to 8,000 feet, in leather sling case	4	10	0
88	Ditto ditto, 4-in...	5	10	0
89	Ditto ditto, 5-in...	6	10	0
89A	Ditto with altituded scale 4,000 feet up and 2,000 feet down, or 6,000 feet up, reading by vernier to 1 foot ..	8	10	0
	Special altitude scales to order.			
90	Pit Barometer, oak frame, ivory scales, sliding vernier and thermometer attached	1	10	0
91	Pit Barometer, in oak case, vernier with rack and pinion adjustment, and thermometer	1	17	6
92	Pit Barometer, in solid oak, square top frame, ivory scales, double vernier, long thermometer, portable screw, plate glass fronts	3	3	0
93	Pit Barometer, ditto ditto, with larger tube and opal scales ..	4	4	0
94	Standard Barometer, Fortins mounted on mahogany board, opal glass reflectors, adjusting screws, vernier reading to $\frac{1}{500}$ in., tube $\frac{1}{2}$-in. bore, thermometer attached	9	10	0
95	Standard Barometer, ditto tube $\frac{3}{10}$-in. bore	7	10	0
	Kew Certificate for Nos. 94 and 95, 7s. 6d. extra.			
96A	Barograph or Recording Barometer, oak or walnut, with plate glass case complete with charts	6	6	0
96B	Ditto ditto, with aneroid dial and drawer for charts	8	8	0
	Set of Charts for one year, 3s. 6d.			

Measuring Rods.

		Each £ s. d.	Per Pair. £ s. d.
979	5-feet Measuring Rod, with white figures ..	0 3 6	0 5 0
979A	6-feet ditto	0 3 6	0 6 0
980	5-feet Jointed ditto, with secret spring ..	0 4 0	0 7 6
981	6-feet ditto	0 4 6	0 8 6

Offset Staves.

982	10-link, painted three colours, and iron shod ..	each	0 4 6
983	10-link, with brass chain hook	„	0 6 0

Ranging Poles.

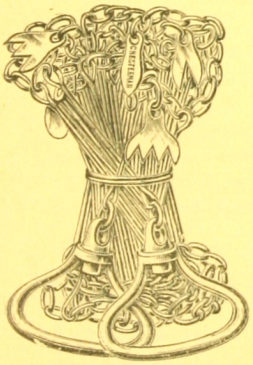
984	6-feet iron strap shoes, painted three colours	Per Doz.	1 13 0
985	8-feet ditto	„	1 19 0
986	10-feet ditto	„	2 14 0
987	Red and White Bunting Flags ..	Per doz. 11s. and	0 14 0

Land Chain Arrows.

		Per Set.
	15-in. long in sets of 10	
999	Chesterman's Best Iron Wire	0 1 3
1000	Ditto best Steel Wire, hardened, tempered, and japanned	0 1 6
1001	Ditto strong ditto ditto ditto	0 2 0
1002	Ditto extra strong ditto ditto	0 2 6

Drop Arrows, 2s. 6d. each.

Land Chains.



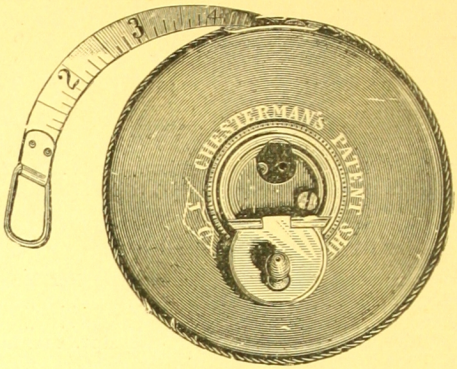
		50 ft. s. d.	66 ft. s. d.	100 ft. s. d.
1005	Iron Wire, three oval rings ..	6 6	8 6	9 9
1006	Galvanised Wire	8 6	10 6	13 0
1007	Steel Wire (No. 12, W.G.) ..	7 6	14 0	16 6
1008	Thick Steel Wire (No. 8, W.G.)	12 0	17 0	20 0
1009	Pit Chain, all brass (10 fathoms 21s.) ..	18 6	21 0	27 0
1010	Ditto, 10 links, brass at each end	—	15 6	--
1011	Standard Chain, all links brazed	18 6	27 6	35 0

Engineer's Pocket Tapes.

		s. d.
1017	6½ feet Steel Scale Tape, in German Silver case, Spring Top, English and Metre; reverse side, 8 Scales and 4 Chain Scales	5 6
1018	Ditto ditto 12 Engineer's Scales	5 6
1018A	3 feet Tape ditto, English and Metres	3 6
1018B	6 feet ditto ditto	4 6

Chesterman's Measuring Tapes.

No. 1016.



		33 ft.		50 ft.		66 ft.		100 ft.	
		s.	d.	s.	d.	s.	d.	s	d.
1012	Patent Metallic Tape, in leather case	5	0	6	6	7	6	10	6
1013	Loose Tapes for ditto	3	0	4	0	5	0	8	0
1014	Strong Linen Tape, in leather case ..	6	0	7	3	8	6	12	0
1015	Loose Tapes for ditto	3	6	4	6	5	6	8	6

1012 and 1014 are fitted with flush handles 1s. each extra.

CHESTERMAN STEEL TAPES.

1016	⅜-in. Steel Tape in leather case, flush handle (feet and inches)	13	0	18	0	23	0	32	0
1016A	½-in. ditto ditto	15	6	21	6	27	6	38	0
1016B	¾-in. ditto ditto	21	0	30	0	36	0	53	0

Watt & Blair's Scotch Tapes.

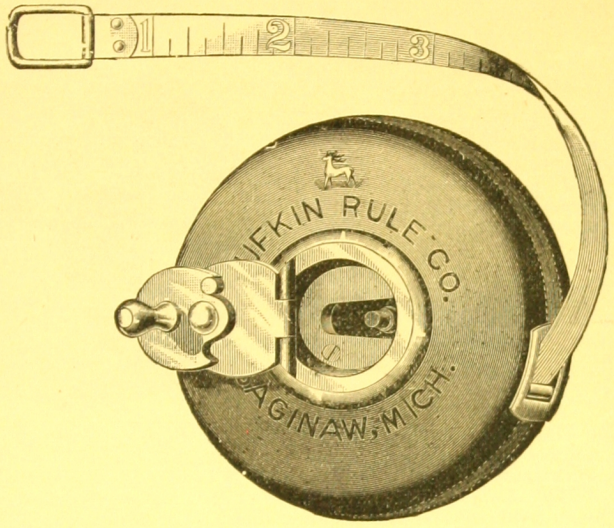
STITCHED BLACK LEATHER CASE.
EACH TAPE STAMPED MAKER'S NAME ON BACK.

These Tapes, so many years in the highest repute, still maintain the very excellent qualities of resisting moisture and retaining their correctness.

Tape ⅝-inches Wide. Links and Decimals

		33 ft.		50 ft.		66 ft.		100 ft.	
		s.	d.	s.	d.	s.	d.	s.	d.
1019	In case with folding handle ..	7	0	8	0	10	0	15	0
1020	Flush handle	8	0	9	0	11	0	16	0
1021	Loose tapes to re-fill	4	0	5	0	6	6	9	3

AMERICAN STEEL MEASURING TAPES.



With double folding nickel-plated flush handle, opened by pressing small pin or button on opposite side.
Hard leather cases.

Measurements Guaranteed.

Patented May 23rd, 1893.

Three-eighth-inch "Reliable" Steel Tape in Case.

		33	50	66	100 feet.
L201	Feet, inches, and eighths, and links on back	11/9	16/-	20/6	28/6
L201D	Feet and inches, metres on back	13/-	18/3	23/3	33/-

Half-inch "Reliable" Steel Tape in Case.

		33	50	66	100 feet
L301	Feet, inches and eighths, and links on back	13/-	18/-	23/-	32/-
L301D	Feet and inches, metres on back	14/6	20/3	26/-	36/6

The "Challenge" Tape, ⅜-inch wide, in Leather Case, with Nickel Plated Flush Handle.

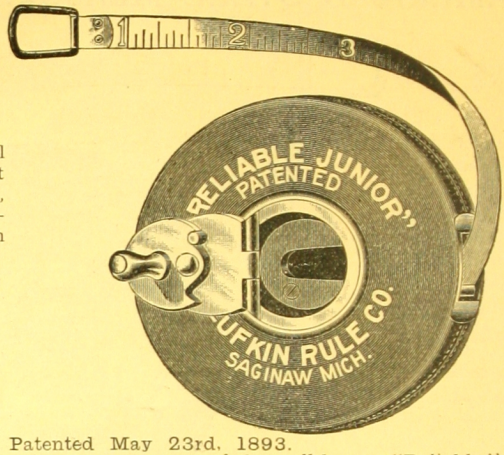
		25	50	75	100 feet
L260	Feet, inches, and eighths...	8/3	10/-	13/3	17/3
L260D	Feet, inches and eighths, metre on back	10/9	12/6	17/-	22/-
L260E	Feet, inches and eighths, links on back	10/9	12/6	17/-	22/-

American Metallic Linen Tapes.

Tape ⅜-inch wide, made of best woven linen with metallic warp.
Hard Leather Cases.

		33	50	66	100 feet
L601	Feet and inches, links on back	4/3	5/3	5/9	8/-
L601D	Feet and inches, metres on back	4/3	5/3	5/9	8/-
L601F	Loose tapes, feet and links	2/-	2/6	3/3	5/-
L601F	Ditto feet and metres	2/-	2/6	3/3	5/-

"Reliable Junior."



A 50 foot Steel measuring Tape that weighs only 5 ozs., and can be conveniently carried in vest pocket.

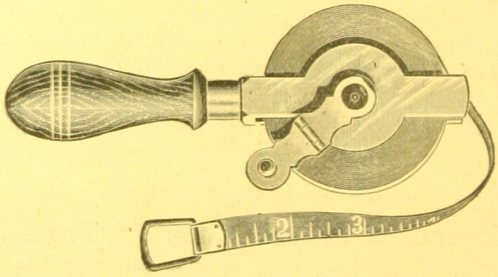
Patented May 23rd, 1893.

This steel tape is an exact counterpart of the well-known "Reliable," and not much over one-half its size and weight. It is a beautiful piece of workmanship, and although small and light, is constructed in such durable manner, and the steel also of sufficient weight, that with proper care it will wear as long as an ordinary steel tape. It is, of course, not designed to replace or do the heavy work of a larger and heavier tape, but for such as have frequent use for a steel tape, and wish to have one constantly with them, this is an article of great value and convenience. Extreme accuracy and the finest construction are guaranteed.

TAPE ¼-INCH WIDE.

	Length	25 feet.	33 feet.	50 feet.	66 feet
		s. d.	s. d.	s. d.	s. d.
L103 Inches and Feet only ..		9 3	9 9	10 6	12 9
L103D ,, and Metres on back		—	—	12 6	—

"Reliable" Frame Steel Tapes.



Frame Steel Tape ½-in. with folding winder, the frame nickel-plated with rosewood handle.

	Feet	50	66	100
		s. d.	s. d.	s. d.
Marked feet, inches, and eighths one side only ..		13 3	15 9	22 6
Ditto, marked feet, inches and eighths one side, links on back, with patent double folding flush winder		18 9	23 9	33 9

CAT 40

Chief Office and Branch Depots.

MANCHESTER :

8, Albert Square.

Telegrams: "HALDEN." Telephone: 549.

LONDON :

8 & 9, Great Chapel Street,

Telegrams: "EYEPIECES." Telephone: 105, Westminster.

NEWCASTLE-on-TYNE :

8, Grainger Street.

Telegrams: "EYEPIECES." Telephone 2072.

BIRMINGHAM :

65, Moor Street.

Telegrams: "SEPIA." Telephone: 2409.

GLASGOW :

31, Cadogan Street. & 178, Hope Street

Telephone: 4337, Corporation.
,, 442, National Argyle.

LEEDS

14 Park Row.

Telephone 3773.

BERLIN :

Gormann Strasse 14.

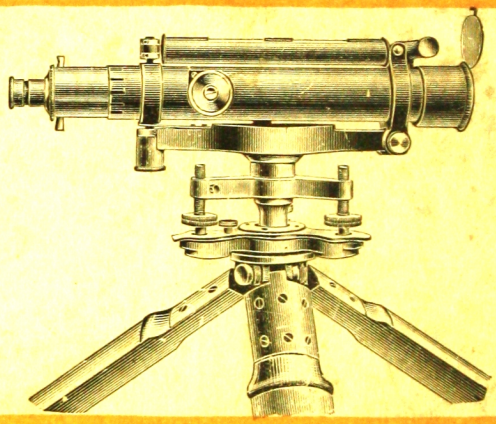
PARIS :

Avenue de la Republique.

J. Halden & Co.
Limited.

SECTION A

J Halden & Co.
Limited.



Manchester, 8, Albert Square.

London, 8 & 9, Gt Chapel St., Victoria St., S.W.

Newcastle on Tyne, 8, Grainger Street.

Birmingham, 65, Moor Street.

Glasgow, 31 Cadogan St
& 178, Hope Street

Leeds, 14 Park Row,

Berlin. Paris.